

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
Region 10

In The Matter Of:

GOULD SUPERFUND SITE, SOILS UNIT  
PORTLAND, OREGON

EPA DOCKET NO.  
1091-01-10-106

NL INDUSTRIES, INC., GOULD, INC.,  
JOHNSON CONTROLS, INC., EXIDE, INC.)  
AT&T TECHNOLOGIES, INC.,  
RHONE-POULENC, and BURLINGTON  
NORTHERN RAILROAD CO.

ADMINISTRATIVE ORDER

Respondents.

Proceeding Under Section 106(a)  
of the Comprehensive Environmental  
Response, Compensation, and  
Liability Act of 1980,  
as amended 42 U.S.C. § 9606(a)

TABLE OF CONTENTS

	Page
I. INTRODUCTION AND JURISDICTION . . . . .	2
II. FINDINGS OF FACT. . . . .	3
III. CONCLUSIONS OF LAW AND DETERMINATIONS . . . . .	12
IV. NOTICE TO THE STATE . . . . .	13
V. ORDER . . . . .	13
VI. DEFINITIONS . . . . .	13
VII. NOTICE OF INTENT TO COMPLY. . . . .	16
VIII. PARTIES BOUND . . . . .	17

ADMINISTRATIVE ORDER  
Page -1-

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IX.	WORK TO BE PERFORMED. . . . .	18
A.	<u>Remedial Action</u> . . . . .	20
X.	FAILURE TO ATTAIN PERFORMANCE STANDARDS . . . . .	23
XI.	EPA PERIODIC REVIEW . . . . .	23
XII.	ADDITIONAL RESPONSE ACTIONS . . . . .	24
XIII.	ENDANGERMENT AND EMERGENCY RESPONSE . . . . .	24
XIV.	EPA REVIEW OF SUBMISSIONS . . . . .	25
XV.	PROGRESS REPORTS. . . . .	27
XVI.	QUALITY ASSURANCE, SAMPLING AND DATA ANALYSIS . . . . .	27
XVII.	COMPLIANCE WITH APPLICABLE LAWS . . . . .	28
XVIII.	REMEDIAL PROJECT MANAGER. . . . .	29
XIX.	ACCESS TO SITE NOT OWNED BY RESPONDENT(S) . . . . .	31
XX.	SITE ACCESS AND DATA/DOCUMENT AVAILABILITY. . . . .	32
XXI.	RECORD PRESERVATION . . . . .	34
XXII.	DELAY IN PERFORMANCE. . . . .	35
XXIII.	REIMBURSEMENT OF OVERSIGHT COSTS. . . . .	36
XXIV.	UNITED STATES NOT LIABLE. . . . .	37
XXV.	ENFORCEMENT AND RESERVATIONS. . . . .	38
XXVI.	ADMINISTRATIVE RECORD . . . . .	39
XXVII.	EFFECTIVE DATE AND COMPUTATION OF TIME. . . . .	40
XXVIII.	OPPORTUNITY TO CONFER . . . . .	40

## I. INTRODUCTION AND JURISDICTION

1.1 This Administrative Order ("Order") directs NL Industries, Inc. ("NL"), Gould, Inc. ("Gould"), Johnson Controls, Inc., ("Johnson"), Exide, Inc., ("Exide"), AT&T Technologies, Inc. ("AT&T"), Rhone-Poulenc, and Burlington Northern Railroad Co. (hereinafter collectively referred to as "Respondents"), to perform a remedial action for the remedy set forth in the Record of Decision ("ROD") for the Gould Superfund Site ("Site"), soils unit, issued on March 31, 1988. This Order is issued to Respondents by the United States Environmental Protection Agency ("EPA") under the authority vested in the President of the United States by Section 106(a) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended ("CERCLA"), 42 U.S.C. § 9606(a). This authority was delegated to

1 the Administrator of EPA by Executive Order 12580 (52 Fed. Reg.  
2 2926, January 29, 1987), and was further delegated to EPA  
3 Regional Administrators on September 13, 1987, by EPA Delegation  
4 No. 14-14-B. This authority is conferred on the EPA, Region 10,  
5 Director, Hazardous Waste Division, by Regional Redelegation  
6 Order signed by the Regional Administrator, Region 10.

## 7 II. FINDINGS OF FACT

8 2.1 The following constitutes factual determinations  
9 made by the EPA:

10 2.2 The Site includes property presently owned by  
11 Gould and Rhone-Poulenc, encompassing approximately twenty (20)  
12 to thirty (30) acres, located at, about 5909 N.W. 61st Avenue in  
13 Portland, Multnomah County, Oregon, as described in the ROD at  
14 page 1, and the areal extent of contamination and all suitable  
15 areas in very close proximity to the contamination necessary for  
16 implementation of the response action. The Site is located in a  
17 heavily industrialized area northwest of downtown Portland,  
18 approximately one thousand (1,000) feet southwest of the  
19 Willamette River;

20 2.3 Doane Lake, once a low and swampy area between the  
21 Willamette River and the hills near the Site, is located within  
22 the Site. Filling activities have reduced the lake to two (2)  
23 segments, known as East Doane Lake and West Doane Lake. East  
24 Doane Lake occupies a portion of the Gould Property;

25 2.4 The Willamette River flows generally north through  
26 western Multnomah County to the Columbia River. Anadromous fish

1 along with warm water fish and other aquatic life are found in  
2 the river;

3           2.5 Three principal aquifers are present beneath the  
4 Site: (1) the "fill aquifer", which flows through the fill  
5 material and is the shallowest aquifer; (2) the "alluvial  
6 aquifer", an unconfined body of groundwater in the sandy alluvial  
7 deposits; and (3) the "basalt aquifer", the deepest aquifer  
8 system in the Columbia River basalt. Surface runoff in ditches,  
9 leakage from storm drains and sewers, and inflow from Doane Lake  
10 and the Willamette River contribute recharge to the fill aquifer.  
11 The alluvial aquifer is recharged primarily by direct  
12 infiltration of precipitation. There are numerous groundwater  
13 monitoring wells on- and off-Site. Groundwater flow from the  
14 Site is generally north-northwest toward a discharge area along  
15 the Willamette River. Available data does not indicate that any  
16 of the groundwater wells on-Site or in the general vicinity of  
17 the Site are used for drinking water;

18           2.6 Secondary lead smelting, including battery  
19 recycling operations, began on the Gould property on or about  
20 1949. At that time, the smelting facility was owned and operated  
21 by Morris P. Kirk and Son, Inc. ("Kirk"). Kirk was a subsidiary  
22 of NL, a New Jersey corporation and operated on-Site from on or  
23 about 1949 to 1971. NL, in 1971, purchased the property where  
24 the lead smelting activities occurred and acquired Kirk by  
25 merger. NL manufactures chemicals, oil field equipment, drilling  
26 muds and fluids, and provides oil field services. NL, through

1 Kirk or by itself, operated refining kettles, casting facilities,  
2 and a lead oxide production facility on-Site between 1949 and  
3 1979, and operated the secondary lead smelter on-Site from 1949  
4 to approximately 1972. Gould bought a large portion of the Site  
5 and the lead smelting facility from NL in January 1979 and  
6 continued ongoing operations. Gould suspended battery recycling  
7 operations in October 1979, and terminated the lead oxide process  
8 in May 1981. From 1949 to the present, waste materials made up  
9 in part of several types of hazardous substances, including but  
10 not limited to lead, sulfuric acid, arsenic, cadmium, chromium,  
11 and zinc have been disposed of at the Site.

12           2.7 Rhone-Poulenc owns property within the Site which  
13 lies adjacent to the Gould property and contains a substantial  
14 quantity of the battery casing waste materials disposed of at the  
15 Site. This property was acquired by Rhone-Poulenc in 1966 and  
16 was previously owned by the Northern Pacific Railway Company, and  
17 the Spokane, Portland & Seattle Railway Company. Burlington  
18 Northern acquired these entities by merger in 1970 and 1979,  
19 respectively. On November 1, 1950 the Spokane, Portland &  
20 Seattle Railway Company entered into an agreement with Kirk,  
21 pursuant to which Kirk disposed of crushed batteries on the  
22 Railway company's property. This disposal activity continued  
23 until 1972 or 1973.

24           2.8 Gould, Johnson, Exide, and AT&T each sent large  
25 quantities of used batteries and/or scrap lead to the lead  
26 smelting facility. These materials contained hazardous

1 substances and were no longer useful products when sent to the  
2 Site. The hazardous substances contained in these materials are  
3 the type which were released into the environment at the Site.

4           2.9 The State of Oregon Department of Environmental  
5 Quality ("ODEQ") issued a Notice of Violation and Intent to  
6 Assess Civil Penalties to Gould in July 1981 for discharging  
7 wastewater into Doane Lake without a permit and for releasing  
8 lead oxide dust emissions. Analysis of samples taken by ODEQ  
9 found total lead concentration of 285 milligrams per liter  
10 ("mg/l") in the discharged wastewater. This exceeded EPA and  
11 ODEQ Willamette Basin ambient water quality standards for lead.  
12 In April 1981, ODEQ sampled surface water and sediment from Doane  
13 Lake and yard material at the Site. Analysis of these samples  
14 indicated concentrations of lead ranging from 19 to 450,000 parts  
15 per million ("ppm") lead. ODEQ also monitored airborne  
16 particulate from June through September of 1981 during Gould's  
17 recycling activities. Airborne lead concentrations exceeded  
18 ODEQ, 3.0 micrograms per cubic meter ("ug/m3") monthly average,  
19 and EPA, 1.5 ug/m3 quarterly average, ambient air standards.  
20 Gould performed groundwater monitoring at wells located on the  
21 Site in March 1982. Analysis of this monitoring revealed total  
22 lead concentrations ranging from 0.04 mg/l to 0.29 mg/l. The EPA  
23 primary drinking water standard for lead is 0.05 mg/l;

24           2.10 Pursuant to Section 105 of CERCLA, 42 U.S.C. §  
25 9605, EPA placed the Site on the National Priorities List in  
26 September of 1983, 48 Fed. Reg. 40658;

2.11 Response activities for the Site have been divided into operable units for soil and groundwater. This Order addresses remedial action for the soil operable unit.

2.12 From about August 29, 1985, to about February 1988, Respondents, under EPA oversight, undertook a Remedial Investigation ("RI") and Feasibility Study ("FS") for the soils operable unit of the Site, pursuant to CERCLA and the National Contingency Plan, ("NCP") 40 C.F.R. Part 300.

2.13 The RI found that the groundwater in the alluvial aquifer immediately beneath the battery cases contains dissolved lead in concentrations up to 0.21 mg/l;

2.14 During the RI, surface water samples were taken from Doane Lake and the Willamette River in locations near the Site. Water samples from Doane Lake contained dissolved lead in concentrations up to 0.28 mg/l;

2.15 Airborne lead concentrations as high as 12.76 ug/m3 were measured during RI activities at the Site;

2.16 Also, during the RI, approximately eighty-seven thousand (87,000) tons of buried battery casings and battery casings in surface piles were identified at the Site. The total lead concentrations of some of these casings were as high as nineteen percent (19%). A solid waste exhibiting the characteristic of EP toxicity is a hazardous waste pursuant to Section 3001 of the Resource Conservation and Recovery Act ("RCRA"), 42 U.S.C. § 6921. A hazardous waste under RCRA is also a hazardous substance as defined by section 101(14) of

1 CERCLA, 42 U.S.C. § 9601(14). The maximum concentration of  
2 contaminant for the characteristic of EP toxicity for lead is 5.0  
3 mg/l. All of the battery casing material contained lead at  
4 levels exceeding the characteristic of the Extraction  
5 Procedure Toxicity ("EP Toxicity") for lead; the EP toxicity  
6 concentrations of lead in the battery casing material ranged from  
7 21 mg/l to 220 mg/l. Approximately twenty two thousand (22,000)  
8 cubic yards of soils, sediment, and matter were also identified  
9 at the Site which exceeded the characteristic of EP toxicity for  
10 lead;

11 2.17 An Endangerment Assessment was performed which  
12 identified the potential for human health and exposure risks.  
13 The Endangerment Assessment showed that if no remedial action is  
14 taken, inhalation and ingestion, due to direct contact, may  
15 result in lead exposure at a rate that exceeds the acceptable  
16 intake level, as defined by the Superfund Public Health  
17 Evaluation Manual;

18 2.18 Hazardous substances, particularly lead, at the  
19 Site pose a threat to human health and other biological  
20 ecosystems by releases to surface water, groundwater, and air  
21 pathways;

22 2.19 Surface water runoff may transport contaminants  
23 deposited on the ground or leached from battery casings to Doane  
24 Lake. If Doane Lake overflows, contaminants may be transported  
25 to the Willamette River through the storm drain;

26 2.20 Contaminants may enter the groundwater pathways



1 by percolation of contaminated surface water, and by leaching  
2 from buried battery casings and contaminated soil. The  
3 groundwater could transport contaminants to the Willamette River;

4         2.21 The terrestrial and aquatic organisms and human  
5 population in nearby residential areas, in the Willamette River,  
6 and in the surrounding industrial area may be the possible  
7 receptors of hazardous substances migrating off-Site;

8         2.22 Lead compounds may affect biota in a variety of  
9 ways depending on the route of exposure (air, water, food), the  
10 concentration of lead, and its chemical form. Lead in  
11 sufficiently high concentration may cause chronic toxicity in  
12 freshwater aquatic life. Also, under some circumstances, lead  
13 may bioaccumulate in the food chain;

14         2.23 Lead compounds may affect humans in a variety of  
15 ways depending on the route of exposure (air, water, food), the  
16 concentration of lead, and its chemical form. At the Site, the  
17 primary potential pathways for exposure to lead are through  
18 fugitive dust emissions and direct contact with contaminated  
19 areas. The concentrations of lead inhaled by humans depends on  
20 climatic conditions, particle size, and the proximity of  
21 individuals to the Site. The smaller particulates are respirable  
22 into the deep lung, while larger particulates which are inhaled  
23 can be swallowed with mucus. Lead oxide particles have been  
24 observed at very high concentrations in yard materials  
25 (211,000 ppm). Persons working on or in close proximity to the  
26 Site may thus experience acute lead exposures, which may result

1 in their absorbing high concentrations of lead. Given the lead  
2 concentrations found at the Site, lead which is absorbed by  
3 humans, may result in elevated blood lead levels;

4 2.24 Exposure to lead can cause a decrease in the  
5 concentration of blood proteins throughout the body, and can  
6 impair the utilization of iron. Exposure to lead can produce  
7 long-term and possibly permanent neuropsychological effects. As  
8 exposure levels increase, reproductive effects such as  
9 stillbirths and miscarriages occur, and severe long-term damage  
10 occurs to the blood-forming system, the nervous system, the heart  
11 and blood vessels, kidney, and liver. Lead crosses the placenta  
12 and has been shown to adversely affect the fetus. Lead is  
13 classified as a probable carcinogen with low potency.

14 2.25 Pursuant to Section 117 of CERCLA, 42 U.S.C. §  
15 9617, EPA published notice of the completion of the FS and of the  
16 proposed plan for remedial action, and provided opportunity for  
17 public comment on the proposed remedial action.

18 2.26 The decision of EPA setting forth the remedial  
19 action for soils operable unit of the Site is embodied in the ROD  
20 executed on March 31, 1988. The State of Oregon concurred on the  
21 ROD, which is attached to this Order as Attachment A and is  
22 incorporated by reference. The ROD is supported by an  
23 administrative record that contains the documents and information  
24 upon which EPA based the selection of the remedial action for the  
25 soils operable unit at the Site.

26 2.27 The remedy for the soils unit addresses

1 approximately 87,000 tons of buried battery casings, over 22,000  
2 yards of contaminated soil and sediment, and other wastes found  
3 at the Site. The remedial action chosen in the ROD is designed  
4 to: (1) remove lead from the battery casings through recycling;  
5 (2) reduce the mobility of lead in the contaminated soil,  
6 sediment, and matte at the Site through fixation; (3) continue  
7 monitoring of surface water and groundwater at the Site while  
8 additional study of contamination in these areas is completed;  
9 and, (4) monitor ambient air around the Site to ensure that  
10 remedial actions are carried out in a manner that is protective  
11 of public health.

12           2.28 On February 29, 1989, EPA sent Special Notice  
13 Letters to Gould and NL under the authority of Section 122 of  
14 CERCLA, 42 U.S.C. § 9622 to negotiate the Remedial  
15 Design/Remedial Action. On June 15, 1989, a Consent Decree was  
16 entered into whereby NL agreed to perform certain pre-design  
17 studies which evaluated the remedy selected in the ROD. See  
18 United States of America v. NL Industries, Inc., Civil No.  
19 89-408-PA (D.Or. June 15, 1989). EPA approved the final pre-  
20 design study on March 4, 1991. The pre-design study was  
21 performed by Canonie Environmental Services Corporation, a  
22 consultant to NL. The pre-design study recommends that  
23 performance of the remedial action begin during the wet season,  
24 which is October to May, when approximately 88% of the annual  
25 precipitation occurs at the Site. NL also agreed to perform the  
26 remedial design. EPA approved the remedial design for the soils

operable unit on September 30, 1991.

### III. CONCLUSIONS OF LAW AND DETERMINATIONS

3.1. The Site is a "facility" as defined in section 101(9) of CERCLA, 42 U.S.C. § 9601(9).

3.2. Respondents are "persons" as defined in section 101(21) of CERCLA, 42 U.S.C. § 9601(21).

3.3. Respondents are "liable parties" as defined in section 107(a) of CERCLA, 42 U.S.C. § 9607(a), and are subject to the requirements of this Order pursuant to section 106(a) of CERCLA, 42 U.S.C. § 9606(a).

3.4. The substances listed in paragraph 2.6 are found at the Site and are "hazardous substances" as defined in section 101(14) of CERCLA, 42 U.S.C. § 9601(14).

3.5. The past and present disposal and migration of hazardous substances from the Site are a "release" as defined in section 101(22) of CERCLA, 42 U.S.C. § 9601(22).

3.6. The potential for future migration of hazardous substances from the Site poses a threat of a "release" as defined in section 101(22) of CERCLA, 42 U.S.C. § 9601(22).

3.7. The release and continued threat of release of one or more hazardous substances from the Site may present an imminent and substantial endangerment to the public health or welfare or the environment.

3.8. The contamination and endangerment at this Site constitute an indivisible injury. The actions required by this Order are necessary to protect the public health, welfare, and

1 the environment.

2 IV. NOTICE TO THE STATE

3 4.1 On December 19, 1991, prior to issuing this  
4 Order, EPA notified the State of Oregon Department of  
5 Environmental Quality, that EPA would be issuing this Order.

6 V. ORDER

7 5.1 Based on the foregoing, Respondents are hereby  
8 ordered, jointly and severally, to comply with the following  
9 provisions, including but not limited to all attachments to this  
10 Order, all documents incorporated by reference into this Order,  
11 and all schedules and deadlines in this Order, attached to this  
12 Order, or incorporated by reference into this Order:

13 VI. DEFINITIONS

14 6.1 Unless otherwise expressly provided herein, terms  
15 used in this Order which are defined in CERCLA or in regulations  
16 promulgated under CERCLA shall have the meaning assigned in the  
17 statute or its implementing regulations. Whenever terms listed  
18 below are used in this Order or in the documents attached to this  
19 Order or incorporated by reference into this Order, the following  
20 definitions shall apply:

21 (A) "CERCLA" shall mean the Comprehensive  
22 Environmental Response, Compensation, and Liability Act of 1980,  
23 as amended, 42 U.S.C. §§ 9601, et seq.;

24 (B) "Day" shall mean a calendar day unless expressly  
25 stated to be a working day. "Working day" shall mean a day other  
26 than a Saturday, Sunday, or Federal holiday. In computing any

1 period of time under this Order, where the last day would fall on  
2 a Saturday, Sunday, or Federal holiday, the period shall run  
3 until the end of the next working day;

4 (C) "EPA" shall mean the United States Environmental  
5 Protection Agency;

6 (D) "ODEQ" shall mean the Oregon Department of  
7 Environmental Quality;

8 (E) "National Contingency Plan" or "NCP" shall mean  
9 the National Oil and Hazardous Substance Pollution Contingency  
10 Plan promulgated pursuant to Section 105 of CERCLA, 42 U.S.C. §  
11 9605, codified at 40 C.F.R. Part 300, including any amendments  
12 thereto;

13 (F) "Operation and Maintenance" or "O & M" shall mean  
14 all activities required to maintain the effectiveness of the  
15 response actions;

16 (G) "Paragraph" shall mean a portion of this Order  
17 identified by an Arabic numeral;

18 (H) "Performance Standards" shall mean those cleanup  
19 standards, standards of control, and other substantive  
20 requirements, criteria or limitations, identified in the Record  
21 of Decision, the Remedial Design, and the Scope of Work, that the  
22 Remedial Action and Work required by this Order must attain and  
23 maintain;

24 (I) "Record of Decision" or "ROD" shall mean the EPA  
25 Record of Decision relating to the Site, Soils Operable Unit,  
26 signed on March 31, 1988 by the Regional Administrator, EPA

1 Region 10, and all attachments thereto, and modifications and  
2 amendments thereto;

3 (J) "Remedial Action" or "RA" shall mean those  
4 activities to be undertaken by Respondents to implement the final  
5 plans and specifications provided in the previously approved  
6 Remedial Design, or to implement the remedy as described in the  
7 Record of Decision, including any additional activities required  
8 under Sections X, XI, XII, XIII, and/or XIV of this Order;

9 (K) "Response Costs" shall mean all costs, including  
10 direct costs, indirect costs, and accrued interest incurred by  
11 the United States to perform or support response actions at the  
12 Site. Response costs include but are not limited to the costs of  
13 overseeing the Work, such as the costs of reviewing or developing  
14 plans, reports and other items pursuant to this Order and costs  
15 associated with verifying the Work;

16 (L) "Scope of Work" or "SOW" shall mean the Remedial  
17 Action Scope of Work which is a statement for implementation of  
18 the Remedial Action at the Site's soils unit, as set forth in  
19 Attachment B of this Order. The Remedial Action Scope of Work is  
20 incorporated into this Order and is an enforceable part of this  
21 Order.

22 (M) "Section" shall mean a portion of this Order  
23 identified by a roman numeral and includes one or more  
24 paragraphs;

25 (N) "Site" shall mean the Gould Superfund site,  
26 encompassing approximately twenty (20) to thirty (30) acres,

1 located at about 5909 N.W. 61st Avenue in Portland, Multnomah  
2 County, Oregon, as described in the ROD at page 1, and the areal  
3 extent of contamination and all suitable areas in very close  
4 proximity to the contamination necessary for implementation of  
5 the response action;

6 (O) "State" shall mean the State of Oregon;

7 (P) "United States" shall mean the United States of  
8 America; and

9 (Q) "Work" shall mean all activities Respondents are  
10 required to perform under this Order to implement the ROD for the  
11 soils unit of the Site, including Remedial Action, Operation and  
12 Maintenance, and any activities required to be undertaken  
13 pursuant to Sections VII through XXIII, and XXVI of this Order.

14 VII. NOTICE OF INTENT TO COMPLY

15 7.1 Respondents shall provide, not later than ten  
16 (10) days after the effective date of this Order, written notice  
17 to EPA's Remedial Project Manager (RPM) stating whether  
18 Respondents will comply with the terms of this Order. If  
19 Respondents do not unequivocally commit to perform the RA as  
20 provided by this Order, they shall be deemed to have violated  
21 this Order and to have failed or refused to comply with this  
22 Order. Respondents' written notice shall describe, using facts  
23 that exist on or prior to the effective date of this Order, any  
24 "sufficient cause" defenses asserted by Respondents under  
25 sections 106(b) and 107(c)(3) of CERCLA. The absence of a  
26 response by EPA to the notice required by this paragraph shall



1 not be deemed to be acceptance of Respondents' assertions.

2 VIII. PARTIES BOUND

3 8.1 This Order shall apply to and be binding upon  
4 Respondents identified in paragraph 1.1, their directors,  
5 officers, employees, agents, successors, and assigns.  
6 Respondents are jointly and severally responsible for carrying  
7 out all activities required by this Order. No change in the  
8 ownership, corporate status, or other control of any Respondents  
9 shall alter any responsibilities of such Respondents under this  
10 Order.

11 8.2 Respondents shall provide a copy of this Order to  
12 any prospective owners or successors before a controlling  
13 interest in Respondent's assets, property rights, or stock are  
14 transferred to the prospective owner or successor. Respondents  
15 shall provide a copy of this Order to each contractor, sub-  
16 contractor, laboratory, or consultant retained to perform any  
17 Work under this Order, within five (5) days after the effective  
18 date of this Order or on the date such services are retained,  
19 whichever date occurs later. Respondents shall also provide a  
20 copy of this Order to each person representing any Respondents  
21 with respect to the Site or the Work and shall condition all  
22 contracts and subcontracts entered into hereunder upon  
23 performance of the Work in conformity with the terms of this  
24 Order. With regard to the activities undertaken pursuant to this  
25 Order, each contractor and subcontractor shall be deemed to be  
26 related by contract to the Respondents within the meaning of

1 section 107(b)(3) of CERCLA, 42 U.S.C. § 9607(b)(3).

2 Notwithstanding the terms of any contract, Respondents are  
3 responsible for compliance with this Order and for ensuring that  
4 their contractors, subcontractors and agents comply with this  
5 Order, and perform any Work in accordance with this Order.

6 8.3 Within twenty (20) days after the effective date  
7 of this Order each Respondent that owns real property comprising  
8 all or part of the Site shall record a copy or copies of this  
9 Order in the appropriate governmental office where land ownership  
10 and transfer records are filed or recorded, and shall ensure that  
11 the recording of this Order is indexed to the titles of each and  
12 every property at the Site so as to provide notice to third  
13 parties of the issuance and terms of this Order with respect to  
14 those properties. Respondents shall, within thirty (30) days  
15 after the effective date of this Order, send notice of such  
16 recording and indexing to EPA.

17 8.4 Not later than sixty (60) days prior to any  
18 transfer of any real property interest in any property included  
19 within the Site, Respondents shall submit a true and correct copy  
20 of the transfer document(s) to EPA, and shall identify the  
21 transferee by name, principal business address and effective date  
22 of the transfer.

23 IX. WORK TO BE PERFORMED

24 9.1 Respondents shall cooperate with EPA in providing  
25 information regarding the Work to the public. As requested by  
26 EPA, Respondents shall participate in the preparation of such

1 information for distribution to the public and in public meetings  
2 which may be held or sponsored by EPA to explain activities at or  
3 relating to the Site.

4           9.2 All aspects of the Work to be performed by  
5 Respondents pursuant to this Order shall be under the direction  
6 and supervision of a qualified project manager, the selection of  
7 which shall be subject to approval by EPA. Within five (5) days  
8 after the effective date of this Order, Respondents shall notify  
9 EPA in writing of the name and qualifications of the project  
10 manager, including primary support entities and staff, proposed  
11 to be used in carrying out Work under this Order. If at any time  
12 Respondents propose to use a different project manager,  
13 Respondents shall notify EPA and shall obtain approval from EPA  
14 before the new project manager performs any Work under this  
15 Order.

16           9.3 If EPA disapproves of the selection of the  
17 project manager, Respondents shall submit to EPA within seven (7)  
18 days after receipt of EPA's disapproval of the project manager  
19 previously selected, a list of project managers, including  
20 primary support entities and staff, that would be acceptable to  
21 Respondents. EPA will thereafter provide written notice to  
22 Respondents of the names of the project managers that are  
23 acceptable to EPA. Respondents may then select any approved  
24 project manager from that list and shall notify EPA of the name  
25 of the project manager selected within seven (7) days of EPA's  
26 designation of approved project managers.

1                                   A. Remedial Action

2                   9.4    Respondents shall complete all Work identified in  
3 the attached Remedial Action Scope of Work according to the  
4 attached Remedial Action Scope of Work Schedule, Attachments B  
5 and C, respectively, and incorporated into this Order by  
6 reference thereto.

7                   9.5    Within thirty (30) days after the effective date  
8 of this Order, Respondents shall submit to EPA and the State, a  
9 Work Plan and Schedule for performance of the Remedial Action at  
10 the Site ("Remedial Action Work Plan" and "Remedial Action  
11 Schedule"). The Remedial Action Work Plan shall provide for  
12 construction of the remedy, in compliance with all requirements  
13 of the Scope of Work and the ROD, as set forth in the approved  
14 Remedial Design or any EPA approved modification or amendments  
15 thereto.

16                  9.6    Upon approval of the Remedial Action Work Plan by  
17 EPA, after a reasonable opportunity for review and comment by the  
18 State, Respondents shall implement the activities required under  
19 the Remedial Action Work Plan according to the Remedial Action  
20 Schedule approved by EPA. Respondents shall submit all plans,  
21 submittals, or other deliverables required under the approved  
22 Remedial Action Work Plan in accordance with the Remedial Action  
23 Schedule and Section XIV of this Order. Unless otherwise  
24 directed by the EPA Project Manager, Respondents shall not  
25 commence physical on-site activities at the Site prior to  
26 approval of the Remedial Action Work Plan and Remedial Action

1 Schedule.

2           9.7 Any failure to comply with the Remedial Action  
3 Scope of Work; Remedial Action Scope of Work Schedule; Remedial  
4 Action Work Plan; Remedial Action Schedule or modification or  
5 amendment thereto shall be a violation of this Order. Upon EPA  
6 approval, submittals made pursuant to the Remedial Action Work  
7 Plan shall become incorporated into and become an enforceable  
8 part of this Order.

9           9.8 The Work performed by Respondents pursuant to  
10 this Order shall, at a minimum, achieve the Performance Standards  
11 specified in the ROD, the Remedial Design, and Scope of Work.

12           9.9 Notwithstanding any action by EPA, Respondents  
13 remain fully responsible for achievement of the Performance  
14 Standards in the ROD, the Remedial Design, and the Scope of Work.  
15 Nothing in this Order, or in EPA's approval of any submission  
16 made pursuant hereto, shall be deemed to constitute a warranty or  
17 representation of any kind by EPA that full performance of the  
18 Remedial Design will achieve the performance standards set forth  
19 in the ROD and the Remedial Design. Respondents' compliance with  
20 such approved documents does not foreclose EPA from seeking,  
21 performing or requiring additional actions to achieve the  
22 applicable performance standards.

23           9.10 Respondents shall, prior to any off-site shipment  
24 of hazardous substances from the Site to an out-of-state waste  
25 management facility, provide written notification to the  
26 appropriate state environmental official in the receiving state

1 and to EPA's RPM of such shipment of hazardous substances.

2 However, the notification of shipments shall not apply to any  
3 off-Site shipments when the total volume of all shipments from  
4 the Site to the State will not exceed ten (10) cubic yards.

5 9.11 The notification required by the above-paragraph  
6 9.10 shall be in writing, and shall include the following  
7 information: (1) the name and location of the facility to which  
8 the hazardous substances are to be shipped; (2) the type and  
9 quantity of the hazardous substances to be shipped; (3) the  
10 expected schedule for the shipment of the hazardous substances;  
11 and (4) the method of transportation. Respondent(s) shall notify  
12 the receiving state of major changes in the shipment plan, such  
13 as a decision to ship the hazardous substances to another  
14 facility within the same state, or to a facility in another  
15 state.

16 9.12 Within thirty (30) days after Respondents  
17 conclude that the Work required by this Order has been fully  
18 performed, Respondents shall so notify EPA in writing, and submit  
19 to EPA a written report by a registered professional engineer  
20 certifying that the Work has been completed in full satisfaction  
21 of the requirements of this Order. EPA shall require such  
22 additional activities as may be necessary to complete the Work or  
23 EPA may, based upon present knowledge and Respondent's  
24 certification to EPA, issue written notification to Respondents  
25 that the Work has been completed.

1                   X. FAILURE TO ATTAIN PERFORMANCE STANDARDS

2                   10.1 In the event that EPA determines that additional  
3 response action activities are necessary to meet applicable  
4 Performance Standards, EPA may notify Respondents that such  
5 additional response actions are necessary.

6                   10.2 Unless otherwise stated by EPA, within thirty  
7 (30) days of receipt of notice from EPA that additional response  
8 actions are necessary to meet any applicable Performance  
9 Standards, Respondents shall submit for EPA approval a work plan  
10 for the additional response actions. This work plan shall  
11 conform to the applicable requirements of Sections IX, XVI, and  
12 XVII of this Order. Upon EPA approval of this work plan pursuant  
13 to Section XIV, Respondents shall implement such approved work  
14 plan for additional response actions in accordance with the  
15 provisions and schedule contained therein.

16                   XI. EPA PERIODIC REVIEW

17                   11.1 Under Section 121(c) of CERCLA, 42 U.S.C. §  
18 9621(c), and any applicable regulations, EPA may review the Site  
19 to assure that the Work performed pursuant to this Order  
20 adequately protects public health and the environment. Until  
21 such time as EPA certifies completion of the Work, Respondents  
22 shall conduct requisite studies, investigations, or other  
23 response actions as determined necessary by EPA in order to  
24 permit EPA to conduct the review under section 121(c) of CERCLA.  
25 As a result of any review performed under this paragraph,  
26 Respondents may be required to perform additional Work or to

1 modify the Work previously performed.

2 XII. ADDITIONAL RESPONSE ACTIONS

3 12.1 EPA may determine that in addition to the Work  
4 identified in this Order and attachments to this Order,  
5 additional response action may be necessary to protect public  
6 health or the environment. If EPA determines that such  
7 additional response actions are necessary, EPA may require  
8 Respondents to submit a work plan for additional response  
9 actions. EPA may also require Respondents to modify any plan,  
10 design, or other deliverable required by this Order, including  
11 any approved modifications.

12 12.2 Not later than thirty (30) days after receiving  
13 EPA notice that additional response actions are required pursuant  
14 to this Section, Respondents shall submit a work plan for the  
15 additional response activities to EPA for review and approval.  
16 Upon approval by EPA, the work plan is incorporated into this  
17 Order as a requirement of this Order and shall be an enforceable  
18 part of this Order. Upon approval of the work plan by EPA,  
19 Respondents shall implement the work plan according to the  
20 standards, specifications, and schedule in the approved work  
21 plan. Respondents shall notify EPA of their intent to perform  
22 such additional response actions within seven (7) days after  
23 receipt of EPA's request for such additional response actions.

24 XIII. ENDANGERMENT AND EMERGENCY RESPONSE

25 13.1 In the event of any action or occurrence during  
26 the performance of the Work which causes or threatens to cause a



1 release of a hazardous substance or which may present an  
2 immediate threat to public health or welfare or the environment,  
3 Respondents shall immediately take all appropriate action to  
4 prevent, abate, or minimize the threat, and shall immediately  
5 notify EPA's RPM or, if the RPM is unavailable, EPA's Alternate  
6 RPM. If neither of these persons is available Respondents shall  
7 notify the EPA Emergency Response Unit, Region 10. Respondents  
8 shall take such action in consultation with EPA's RPM and in  
9 accordance with all applicable provisions of this Order,  
10 including but not limited to the Health and Safety Plan and the  
11 Contingency Plan. In the event that Respondents fail to take  
12 appropriate response action as required by this Section, and EPA  
13 takes that action instead, Respondents shall reimburse EPA for  
14 all costs of the response action not inconsistent with the NCP.  
15 Respondents shall pay the response costs in the manner described  
16 in Section XXIV of this Order, within thirty (30) days of  
17 Respondents' receipt of demand for payment and a cost summary of  
18 the costs incurred.

19 13.2 Nothing in the preceding paragraph shall be  
20 deemed to limit any authority of the United States to take,  
21 direct, or order all appropriate action to protect human health  
22 and the environment or to prevent, abate, or minimize an actual  
23 or threatened release of hazardous substances on, at, or from the  
24 Site.

#### 25 XIV. EPA REVIEW OF SUBMISSIONS

26 14.1 After review of any deliverable, plan, report or  
27 ADMINISTRATIVE ORDER  
28 Page -25-

1 other item which is required to be submitted for review and  
2 approval pursuant to this Order, EPA may: (a) approve the  
3 submission; (b) approve the submission with modifications; (c)  
4 disapprove the submission and direct Respondents to re-submit the  
5 document after incorporating EPA's comments; or (d) disapprove  
6 the submission and assume responsibility for performing all or  
7 any part of the response action. As used in this Order, the  
8 terms "approval by EPA," "EPA approval," or a similar term means  
9 the action described in paragraphs (a) or (b) of this paragraph.

10 14.2 In the event of approval or approval with  
11 modifications by EPA, Respondents shall proceed to take any  
12 action required by the plan, report, or other item, as approved  
13 or modified by EPA.

14 14.3 Upon receipt of a notice of disapproval or a  
15 request for a modification, Respondents shall, within twenty-one  
16 (21) days or such longer time as specified by EPA in its notice  
17 of disapproval or request for modification, correct the  
18 deficiencies and resubmit the plan, report, or other item for  
19 approval. Notwithstanding the notice of disapproval, or approval  
20 with modifications, Respondents shall proceed, at the direction  
21 of EPA, to take any action required by any non-deficient portion  
22 of the submission.

23 14.4 If any submission or resubmission is not approved  
24 by EPA, Respondents shall have failed to comply with and properly  
25 provide remedial action in accordance with this Order.

1                                   XV. PROGRESS REPORTS

2           15.1 In addition to the other deliverables required by  
3 this Order, Respondents shall provide monthly progress reports to  
4 EPA with respect to actions and activities undertaken pursuant to  
5 this Order. The progress reports shall be submitted on or before  
6 the 10th day of each month following the effective date of this  
7 Order. Respondents' obligation to submit progress reports  
8 continues until EPA gives Respondents written notice to the  
9 contrary. At a minimum these progress reports shall: (1)  
10 describe the actions which have been taken to comply with this  
11 Order during the prior month; (2) include all results of sampling  
12 and tests and all other data received by Respondents and not  
13 previously submitted to EPA; (3) describe all work planned for  
14 the next month with schedules relating such work to the overall  
15 project schedule for RA completion; and (4) describe all problems  
16 encountered and any anticipated problems, any actual or  
17 anticipated delays, and solutions developed and implemented to  
18 address any actual or anticipated problems or delays.

19                           XVI. QUALITY ASSURANCE, SAMPLING, AND DATA ANALYSIS

20           16.1 Respondents shall use the quality assurance,  
21 quality control, and chain of custody procedures described in the  
22 "EPA NEIC Policies and Procedures Manual," May 1978, revised May  
23 1986, EPA-330/9-78-001-R, EPA's "Guidelines and Specifications  
24 for Preparing Quality Assurance Program Documentation," June 1,  
25 1987, EPA's "Data Quality Objective Guidance," (EPA/540/G87/003  
26 and 004), and any amendments to these documents, while conducting

1 all sample collection and analysis activities required herein by  
2 any plan. To provide quality assurance and maintain quality  
3 control, Respondents shall:

- 4 A. Use only laboratories which have a documented  
5 Quality Assurance Program that complies with EPA  
6 guidance document QAMS-005/80;
- 7 B. Ensure that the laboratory used by the Respondents  
8 for analyses, performs according to a method or  
9 methods deemed satisfactory to EPA and submits all  
10 protocols to be used for analyses to EPA at least  
11 fourteen (14) days before beginning analysis; and
- 12 C. Ensure that EPA personnel and EPA's authorized  
13 representatives are allowed access to the  
14 laboratory and personnel utilized by the  
15 Respondents for analyses.

16 Respondents shall notify EPA not less than fourteen (14) days in  
17 advance of any sample collection activity. At the request of  
18 EPA, Respondents shall allow split or duplicate samples to be  
19 taken by EPA or its authorized representatives, of any samples  
20 collected by Respondents with regard to the Site or pursuant to  
21 the implementation of this Order. In addition, EPA shall have  
22 the right to take any additional samples that EPA deems  
23 necessary.

#### 24 XVII. COMPLIANCE WITH APPLICABLE LAWS

25 17.1 All activities undertaken by Respondents pursuant  
26 to this Order shall be performed in accordance with the  
27 requirements of all Federal and State laws and regulations. EPA  
28 has determined that the activities contemplated by this Order are  
not inconsistent with the NCP.

1 17.2 Except as provided in section 121(e) of CERCLA,  
2 42 U.S.C. § 9621(e), and the NCP, no permit shall be required for  
3 any portion of the Work conducted entirely on-Site. Where any  
4 portion of the Work requires a Federal or state permit or  
5 approval, Respondents shall submit timely applications and take  
6 all other actions necessary to obtain and to comply with all such  
7 permits or approvals.

8 17.3 This Order is not, and shall not be construed to  
9 be, a permit issued pursuant to any Federal or state statute or  
10 regulation.

11 17.4 All materials removed from the Site shall be  
12 disposed of or treated at a facility approved by EPA's RPM and in  
13 accordance with section 121(d)(3) of CERCLA, 42 U.S.C.  
14 § 9621(d)(3); with EPA "Revised Off-Site Policy," OSWER Directive  
15 9834.11, November 13, 1987; and with all other applicable  
16 Federal, state, and local requirements.

17 XVIII. REMEDIAL PROJECT MANAGER

18 18.1 All communications, whether written or oral, from  
19 Respondents to EPA shall be directed to EPA's Remedial Project  
20 Manager (RPM) or Alternate Remedial Project Manager.  
21 Respondents shall submit to EPA three copies of all documents,  
22 including plans, reports, and other correspondence, which are  
23 developed pursuant to this Order, and shall send these documents  
24 by overnight mail unless otherwise specified by EPA.

1 EPA's Remedial Project Manager is:

2 Mr. Chip Humphrey  
3 U.S. Environmental Protection Agency  
4 811 S.W. Sixth Avenue, 3rd Floor  
5 Portland, Oregon 97204

6 18.2 EPA has the unreviewable right to change its  
7 Remedial Project Manager or Alternate Remedial Project Manager.  
8 If EPA changes its Remedial Project Manager or Alternate Remedial  
9 Project Manager, EPA will inform Respondents in writing of the  
10 name, address, and telephone number of the new Remedial Project  
11 Manager or Alternate Remedial Project Manager.

12 18.3 EPA's RPM and Alternate RPM shall have the  
13 authority lawfully vested in a Remedial Project Manager and On-  
14 Scene Coordinator (OSC) by the National Contingency Plan, 40  
15 C.F.R. Part 300. EPA's RPM or Alternate RPM shall have  
16 authority, consistent with the National Contingency Plan, to halt  
17 any work required by this Order, and to take any necessary  
18 response action.

19 18.4 Within ten (10) days after the effective date of  
20 this Order, Respondents shall designate a Project Coordinator and  
21 shall submit the name, address, and telephone number of the  
22 Project Coordinator to EPA for review and approval. Respondents'  
23 Project Coordinator shall be responsible for overseeing  
24 Respondents' implementation of this Order. If Respondents wish  
25 to change their Project Coordinator, Respondents shall provide  
26 written notice to EPA, five (5) days prior to changing the  
27 Project Coordinator, of the name and qualifications of the new

1 Project Coordinator. Respondents selection of a Project  
2 Coordinator shall be subject to EPA approval.

3 XIX. ACCESS TO SITE NOT OWNED BY RESPONDENT(S)

4 19.1 If the Site, the off-Site area that is to be used  
5 for access, or other property subject to or affected by the clean  
6 up, is owned in whole or in part by parties other than those  
7 bound by this Order, Respondents will obtain, or use their best  
8 efforts to obtain, Site access agreements from the present  
9 owner(s) within thirty (30) days of the effective date of this  
10 Order. Such agreements shall provide access for EPA, its  
11 contractors and oversight officials, the state and its  
12 contractors, and Respondents or Respondents' authorized  
13 representatives and contractors, and such agreements shall  
14 specify that Respondents are not EPA's representative with  
15 respect to liability associated with Site activities. Copies of  
16 such agreements shall be provided to EPA prior to Respondents'  
17 initiation of field activities. If access agreements are not  
18 obtained within the time referenced above, Respondents shall  
19 immediately notify EPA of such failure and the efforts made to  
20 obtain access. Subject to the United States' non-reviewable  
21 prosecutorial discretion, EPA may use its legal authorities to  
22 seek to obtain access for the Respondents, may perform response  
23 actions with EPA contractors at the property in question, and may  
24 take enforcement action if Respondents have failed, without  
25 sufficient cause, to obtain access agreements. If EPA performs  
26 tasks or activities with contractors and does not terminate this

1 Order, Respondents shall perform all other activities not  
2 requiring access to that property. Respondents shall integrate  
3 the results of any such tasks undertaken by EPA into their  
4 reports and deliverables.

5 19.2 Respondents shall save and hold harmless the  
6 United States and its officials, agents, employees, contractors,  
7 subcontractors, or representatives for or from any and all claims  
8 or causes of action or other costs incurred by the United States  
9 including but not limited to attorneys fees and other expenses of  
10 litigation and settlement arising from or on account of acts or  
11 omissions of Respondents, their officers, directors, employees,  
12 agents, contractors, subcontractors, and any persons acting on  
13 their behalf or under their control, in carrying out activities  
14 pursuant to this Order, including any claims arising from any  
15 designation of Respondents as EPA's authorized representatives  
16 under section 104(e) of CERCLA, 42 U.S.C. § 9604(e).

17 XX. SITE ACCESS AND DATA/DOCUMENT AVAILABILITY

18 20.1 Respondents shall allow EPA and its authorized  
19 representatives and contractors to enter and freely move about  
20 all property at the Site and off-Site areas subject to or  
21 affected by the Work under this Order or where documents required  
22 to be prepared or maintained by this Order are located, for the  
23 purposes of inspecting conditions, activities, the results of  
24 activities, records, operating logs, and contracts related to the  
25 Site or Respondents and their representatives or contractors  
26 pursuant to this Order; reviewing the progress of the Respondents



1 in carrying out the terms of this Order; conducting tests as EPA  
2 or its authorized representatives or contractors deem necessary;  
3 using a camera, sound recording device or other documentary type  
4 equipment; and verifying the data submitted to EPA by  
5 Respondents. Respondents shall allow EPA and its authorized  
6 representatives to enter the Site, to inspect and copy all  
7 records, files, photographs, documents, sampling and monitoring  
8 data, and other writings related to Work undertaken in carrying  
9 out this Order. Nothing herein shall be interpreted as limiting  
10 or affecting EPA's right of entry or inspection authority under  
11 Federal law.

12           20.2 Respondents may assert a claim of business  
13 confidentiality covering part or all of the information submitted  
14 to EPA pursuant to the terms of this Order under 40 C.F.R.  
15 § 2.203, provided such claim is not inconsistent with section  
16 104(e)(7) of CERCLA, 42 U.S.C. § 9604(e)(7), or other provisions  
17 of law. This claim shall be asserted in the manner described by  
18 40 C.F.R. § 2.203(b) and substantiated by Respondents at the time  
19 the claim is made. Information determined to be confidential by  
20 EPA will be given the protection specified in 40 C.F.R. Part 2.  
21 If no such claim accompanies the information when it is submitted  
22 to EPA, it may be made available to the public by EPA or the  
23 state without further notice to the Respondents. Respondents  
24 shall not assert confidentiality claims with respect to any data  
25 related to Site conditions, sampling, or monitoring. In the  
26 event that Respondents assert any confidentiality claim,

1 Respondents shall provide EPA with an index of documents that  
2 Respondents claim contain confidential business information. The  
3 index shall contain, for each document, the date, author,  
4 addressee, and subject of the document.

5 XXI. RECORD PRESERVATION

6 21.1 Respondents shall provide to EPA upon request,  
7 copies of all documents and information within their possession  
8 and/or control or that of their contractors or agents relating to  
9 activities at the Site or to the implementation of this Order,  
10 including but not limited to sampling, analysis, chain of custody  
11 records, manifests, trucking logs, receipts, reports, sample  
12 traffic routing, correspondence, or other documents or  
13 information related to the Work. Respondents shall also make  
14 available to EPA for purposes of investigation, information  
15 gathering, or testimony, their employees, agents, or  
16 representatives with knowledge of relevant facts concerning the  
17 performance of the Work.

18 21.2 Until ten (10) years after EPA provides written  
19 notice pursuant to paragraph 9.10, Respondents shall preserve and  
20 retain all records and documents in their possession or control,  
21 including the documents in the possession or control of their  
22 contractors and agents on and after the effective date of this  
23 Order that relate in any manner to the Site. At the conclusion  
24 of this document retention period, Respondents shall notify the  
25 United States at least ninety (90) calendar days prior to the  
26 destruction of any such records or documents, and upon request by

1 the United States, Respondents shall deliver any such records or  
2 documents to EPA.

3 21.3 Until ten (10) years after EPA provides written  
4 notice pursuant to paragraph 9.12 of this Order, Respondents  
5 shall preserve, and shall instruct their contractors and agents  
6 to preserve, all documents, records, and information of whatever  
7 kind, nature or description relating to the performance of the  
8 Work. Upon the conclusion of this document retention period,  
9 Respondents shall notify the United States at least ninety (90)  
10 days prior to the destruction of any such records, documents or  
11 information, and, upon request of the United States, Respondents  
12 shall deliver all such documents, records and information to EPA.

13 XXII. DELAY IN PERFORMANCE

14 22.1 Any delay in performance of this Order that, in  
15 EPA's judgment, is not properly justified by Respondents under  
16 the terms of this Section shall be considered failure to comply  
17 with this Order and failure to properly perform remedial action.  
18 Any delay in performance of any requirements under this Order  
19 shall not affect Respondents' obligations to fully perform all  
20 obligations under the terms and conditions of this Order.

21 22.2 Respondents shall notify EPA of any delay or  
22 anticipated delay in performing any requirement of this Order.  
23 Such notification shall be made by telephone to EPA's RPM or  
24 Alternate RPM within forty eight (48) hours after Respondents  
25 first know or should have known that a delay might occur.  
26 Respondents shall adopt all reasonable measures to avoid or

1 minimize any such delay. Within five (5) business days after  
2 notifying EPA by telephone, Respondents shall provide written  
3 notification fully describing the nature of the delay, any  
4 justification for delay, any reason why Respondents should not be  
5 held strictly accountable for failing to comply with any relevant  
6 requirements of this Order, the measures planned and taken to  
7 minimize the delay, and a schedule for implementing the measures  
8 that will be taken to mitigate the effect of the delay.  
9 Increased costs or expenses associated with implementation of the  
10 activities called for in this Order is not a justification for  
11 any delay in performance.

12 XXIII. REIMBURSEMENT OF OVERSIGHT COSTS

13 23.1 Respondents shall reimburse EPA, upon written  
14 demand, for all response costs incurred by the United States in  
15 overseeing Respondent's implementation of the requirements of  
16 this Order or in performing any response action which Respondents  
17 fail to perform in compliance with this Order. EPA may submit to  
18 Respondents on a periodic basis an accounting of all oversight  
19 costs incurred by EPA with respect to this Order. EPA's Costs  
20 Document Monitoring System (CDMS) or such other summary as  
21 certified by EPA, shall serve as basis for payment demands.

22 23.2 Respondents shall, within thirty (30) days of  
23 receipt of each EPA accounting, remit a certified or cashier's  
24 check for the amount of those costs. Interest shall accrue from  
25 the later of the date that payment of a specified amount is  
26 demanded in writing or the date of the expenditure. The interest

1 rate is the rate established by the Department of the Interior  
2 pursuant to 31 U.S.C. § 3717 and 4 C.F.R. § 102.13.

3 23.3 Checks shall be made payable to the Hazardous  
4 Substances Superfund and shall include the name of the Site, the  
5 Site identification number, the account number and the title of  
6 this Order. Checks shall be forwarded to:

7 U.S. Environmental Protection Agency  
8 Superfund Accounting  
9 P.O. Box 360903M  
10 Pittsburgh, Pennsylvania 15251

11 23.4 Respondents shall send copies of each transmittal  
12 letter and check to EPA's RPM.

13 XXIV. UNITED STATES NOT LIABLE

14 24.1 The United States, by issuance of this Order,  
15 assumes no liability for any injuries or damages to persons or  
16 property resulting from acts or omissions by Respondents, or  
17 their directors, officers, employees, agents, representatives,  
18 successors, assigns, contractors, or consultants in carrying out  
19 any action or activity pursuant to this Order. Neither EPA nor  
20 the United States may be deemed to be a party to any contract  
21 entered into by Respondents or their directors, officers,  
22 employees, agents, successors, assigns, contractors, or  
23 consultants in carrying out any action or activity pursuant to  
24 this Order.

1                   XXV. ENFORCEMENT AND RESERVATIONS

2                   25.1 EPA reserves the right to bring an action against  
3 Respondents under section 107 of CERCLA, 42 U.S.C. § 9607, for  
4 recovery of any response costs incurred by the United States  
5 related to this Order and not reimbursed by Respondents. This  
6 reservation shall include but not be limited to past costs,  
7 direct costs, indirect costs, the costs of oversight, the costs  
8 of compiling the cost documentation to support oversight cost  
9 demand, as well as accrued interest as provided in section 107(a)  
10 of CERCLA, 42 U.S.C. § 9607(a).

11                  25.2 Notwithstanding any other provision of this  
12 Order, EPA may, at any time, perform studies, undertake or  
13 complete response actions (or any portion of response actions) as  
14 provided in CERCLA and the NCP, and seek reimbursement from  
15 Respondents for its costs, or seek any other appropriate relief.

16                  25.3 Nothing in this Order shall preclude EPA from  
17 taking any additional action, including modification of this  
18 Order or issuance of new orders, and/or undertaking remedial or  
19 removal actions or from requiring Respondents to perform  
20 additional actions pursuant to CERCLA or any other authority.  
21 Respondents shall be liable under section 107(a) of CERCLA, 42  
22 U.S.C. § 9607(a), for the costs of any such actions undertaken by  
23 the United States for this Site.

24                  25.4 Notwithstanding any provision of this Order, the  
25 United States hereby retains all of its information gathering,  
26 inspection and enforcement authorities and rights under CERCLA,

1 RCRA and any other applicable statutes or regulations.

2 25.5 Respondents shall be subject to civil penalties  
3 under section 106(b) of CERCLA, 42 U.S.C. § 9606(b), of not more  
4 than \$25,000 for each day in which Respondents, without  
5 sufficient cause, willfully violate, or fail or refuse to comply  
6 with this Order. In addition, failure to properly provide  
7 removal or remedial action in accordance with this Order, or any  
8 portion hereof, without sufficient cause, may result in liability  
9 under section 107(c)(3) of CERCLA, 42 U.S.C. § 9607(c)(3), for  
10 punitive damages in an amount at least equal to, and not more  
11 than three times the amount of any costs incurred by the Fund as  
12 a result of such failure to take proper action.

13 25.6 Nothing in this Order shall constitute or be  
14 construed as a release from any claim, cause of action or demand  
15 in law or equity against any person for any liability it may have  
16 arising out of or relating in any way to the Site.

17 25.7 If a court issues an order that invalidates any  
18 provision of this Order or finds that Respondents have sufficient  
19 cause to not comply with one or more provisions of this Order,  
20 Respondents shall remain bound to comply with all provisions of  
21 this Order not invalidated by the court's order.

22 XXVI. ADMINISTRATIVE RECORD

23 26.1 Upon request by EPA, Respondents shall submit to  
24 EPA all documents related to response actions at the Site for  
25 possible inclusion in the administrative record file.

1                   XXVII. EFFECTIVE DATE AND COMPUTATION OF TIME

2                   27.1 This Order shall be effective thirty (30) days  
3 from the date it is signed by EPA. Times for performance of all  
4 actions or activities shall be calculated from this effective  
5 date.

6                   XXVIII. OPPORTUNITY TO CONFER

7                   28.1 Respondents may, within ten (10) days after the  
8 date this Order is signed, request a conference with EPA  
9 representatives to discuss this Order.

10                  28.2 The purpose and scope of the conference  
11 referenced in paragraph 28.1 above shall be limited to issues  
12 involving the implementation of the response actions required by  
13 this Order and the extent to which Respondents intend to comply  
14 with this Order. This conference is not an evidentiary hearing,  
15 and does not constitute a proceeding to challenge this Order. It  
16 does not give Respondents a right to seek review of this Order,  
17 or to seek resolution of potential liability, and no official  
18 stenographic record of the conference will be made. At any  
19 conference held pursuant to Respondents' request, Respondents may  
20 appear in person or by an attorney or other representative.

21                  28.3 Requests for a conference in accordance with this  
22 Section must be made by telephone followed by written  
23 confirmation mailed that day to Ted Yackulic, Assistant Regional  
24 Counsel, U.S. EPA, Office of Regional Counsel, Mail Stop SO-155,  
25 1200 Sixth Avenue, Seattle, Washington, 98101, (206) 553-1218.



1 SO ORDERED, this 22<sup>nd</sup> day of January, 1992.  
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3

4 BY:

Randall Smith  
5 RANDALL SMITH, Director  
6 Region 10 Hazardous Waste Division  
7 U.S. Environmental Protection Agency  
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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION 10  
1200 SIXTH AVENUE  
SEATTLE, WASHINGTON

RECORD OF DECISION,  
DECISION SUMMARY AND  
RESPONSIVENESS SUMMARY

FOR

INTERIM REMEDIAL ACTION  
SOILS UNIT  
GOULD SITE  
PORTLAND, OREGON  
MARCH, 1988

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ATTACHMENT A

RECORD OF DECISION  
REMEDIAL ALTERNATIVE SELECTION  
INTERIM REMEDIAL ACTION  
SOILS UNIT  
GOULD SITE  
PORTLAND, OREGON

# RECORD OF DECISION

## REMEDIAL ALTERNATIVE SELECTION

### Site

Gould site - Portland, Oregon.

### Purpose

This decision document presents the selected interim remedial action for the site, developed in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA), and consistent with (where not precluded by SARA) the National Contingency Plan (NCP, 40 CFR Part 300). The State of Oregon Department of Environmental Quality concurs with the selected remedy.

### Basis for Decision

The decision is based upon the administrative record for the site. This record includes, but is not limited to, the following documents:

- Final Remedial Investigation Report for the Gould site, Portland, Oregon (November 1987)
- Final Feasibility Study Report for the Gould Site, Final Report (February 1988)
- Decision Summary of Remedial Alternative Selection (attached)
- Responsiveness Summary (attached as Appendix B)

A complete list of documents contained in the Administrative Record is included as Appendix C

### Description

This record of decision addresses the soils unit at the Gould site. By doing so the remedy focuses on removing the principal source of lead contamination to the environment. The remedy also includes further study to determine whether additional remedial measures are required for groundwater and surface water at the site.

This remedial action is designed to:

- remove lead from the battery casings through recycling;
- reduce the mobility of lead in the contaminated soil, sediment and matte at the site through fixation;
- continue monitoring of surface water and groundwater at the site while additional study of contamination in these areas is done; and
- monitor ambient air around the site to ensure that remedial actions are carried out in a manner that is protective of public health.

The extent to which lead and other components of the battery casings can be recycled will depend on the results of design work under this remedy. The results of the design studies will be used to determine the recyclability of the battery casings and the protective measures to be employed during remediation. A phased approach, described in the selected remedy, will be employed in the design work.

It is EPA's intent in selecting this remedy to treat all of the battery casings at the site and at the same time minimize the amount of material that must be sent to a RCRA landfill. Should the results of the design phase show that these goals are not compatible, an additional public comment period will be established and this Record of Decision may be modified. At such time, EPA would present for comment additional options for dealing with the treated materials.

Treatment and removal of casings and treatment of soils will remove lead and eliminate potential for exposure due to direct contact and ingestion. Immobilization of lead in soils, sediment and matte will reduce migration of lead as a potential source of further contamination to groundwater and surface water at the site.

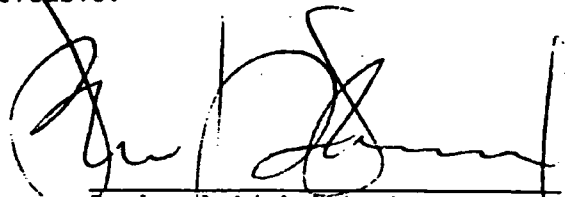
Institutional controls will be implemented, during and after remediation. The purpose of these controls will be to assure that the remedial action will protect public health and the environment during its execution, and to ensure a similar level of protection after the remedial actions have been implemented and prior to a final decision at this site.

**Declaration**

Consistent with CERCLA, as amended by SARA, and the NCP, it is determined that the selected remedy as described above is protective of human health and the environment, attains Federal and State requirements which are applicable or relevant and appropriate, and is cost-effective. This remedy satisfies the preference expressed in SARA for treatment that reduces toxicity, mobility, and volume. Finally, it is determined that this remedy utilizes permanent solutions and alternative treatment technologies to the maximum extent practicable.

3-31-88

Date

  
Regional Administrator  
Environmental Protection Agency  
EPA - Region 10

DECISION SUMMARY  
REMEDIAL ALTERNATIVE SELECTION  
INTERIM REMEDIAL ACTION  
SOILS UNIT  
GOULD SITE  
PORTLAND, OREGON

## TABLE OF CONTENTS

	<u>Page</u>
I SITE DESCRIPTION AND BACKGROUND	1
Site Location and Description	
Site Features	
II ENFORCEMENT SUMMARY	6
III COMMUNITY RELATIONS SUMMARY	9
IV NATURE AND EXTENT OF PROBLEM	11
Contaminants Evaluated	
Extent of Contamination	
Treatability Studies	
Potential Transport and Need for Additional Study	
Endangerment Assessment	
V ALTERNATIVES EVALUATION	26
Summary of Alternatives and Evaluation Criteria	
Screening of Alternatives	
Alternative 2C Evaluation	
Alternative 10C Evaluation	
Alternative 21 Evaluation	
VI SELECTED REMEDIAL ALTERNATIVE	42
Description of the Selected Remedy	
Design Studies	
Monitoring	
Institutional Controls	
Additional Study	
Performance Standards	
Statutory Determinations	

## APPENDICES

- A. APPLICABLE AND APPROPRIATE REQUIREMENTS
- B. RESPONSIVENESS SUMMARY
- C. INDEX TO ADMINISTRATIVE RECORD
- D. STATE CONCURRENCE



## LIST OF TABLES

		Page
Table 1	Enforcement History	7
Table 2	Battery Casing Quantities and Locations	11
Table 3	Estimated Battery Component Quantities	12
Table 4	Estimated Secondary Source Volumes	15
Table 5	Cost Screening Summary	29

## LIST OF FIGURES

		Page
Figure 1	General Vicinity Map	2
Figure 2	Study Area Location Map	3
Figure 3	Locations of Battery Casings and Matte	13
Figure 4	Lead Contamination in Surface Soils	14
Figure 5	Lead Contamination in Fill Aquifer	17
Figure 6	Lead Contamination in Upper Alluvial Aquifer	18
Figure 7	Lead Contamination in Lower Alluvial Aquifer	19
Figure 8	Summary of Exposure Calculations	24
Figure 9	Estimated Areas to be Remediated Under Selected Remedy	43

Note: Sources for Figures are Remedial Investigation and Feasibility Study Reports.

# I. SITE DESCRIPTION AND BACKGROUND

## Site Location and Description

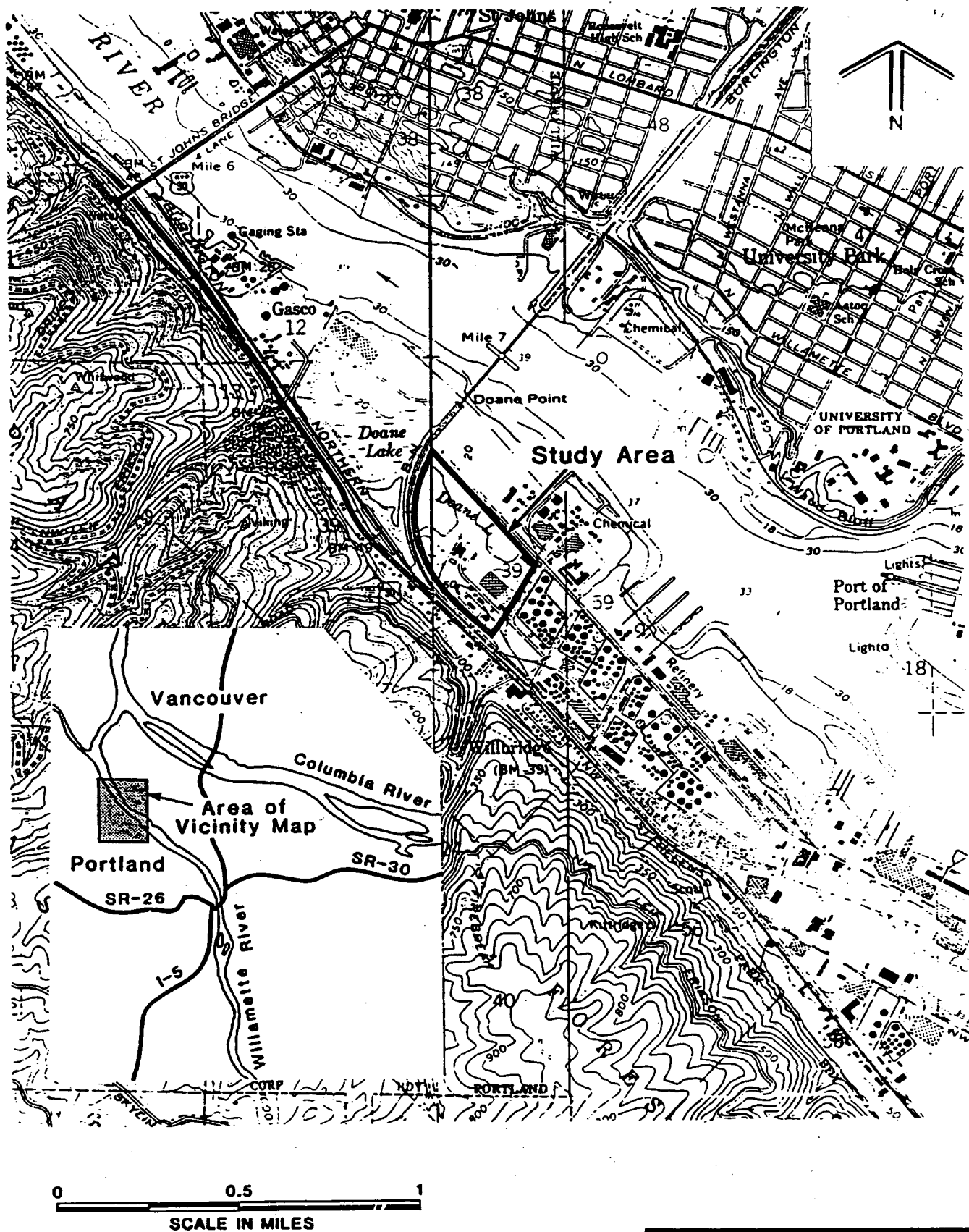
The Gould site is located in the Doane Lake area of Portland between N.W. St. Helens Road and N.W. Front Avenue, about 1.3 miles southeast of St. John's Bridge. The Gould site includes the property presently owned by Gould, along with areas outside the property boundary where battery casings and other residues from operations on the Gould site were placed. Because of the potential for dispersion of contaminants in water, the site also includes the 1963 boundaries of Doane Lake. As shown on Figure 1 (General Vicinity Map), the Willamette River lies about 1,000 feet to the northeast and flows northwest, parallel to Front Avenue. The area is heavily industrialized. The Gould site is only a portion of the 60-acre study area, shown on Figure 2 (Study Area Location Map).

The study area is roughly bounded on the southwest by N.W. St. Helens Road, on the northeast by N.W. Front Avenue, on the southeast by 61st Street, and on the west and northwest by the Burlington Northern railroad right-of-way. Industrial properties adjacent to the Gould site that lie wholly or partly within the study area include American Steel Industries, Inc.; ESCO Corporation; Rhone-Poulenc Inc.; Northwest Equipment Rentals, Inc. (leased from Rhone-Poulenc); Schnitzer Investment Corporation, and Liquid Air Corporation (leased from Schnitzer).

Available aerial photographs taken since 1936, and topographic mapping as early as 1884, indicate that the study area now occupied by Gould property and adjacent industries was formed by gradual and intermittent man made filling of a fairly large body of shallow water known as Doane Lake.

On the current Gould site, a secondary lead smelting facility was completed and went into operation in 1949 under the ownership of Morris P. Kirk and Sons (Kirk & Sons), a subsidiary of NL Industries, Inc. Facility operations consisted of lead-acid battery recycling, lead smelting and refining, zinc alloying and casting, cable sweating (removal of lead sheathing from copper cable), and (after 1965) lead oxide production. NL Industries, Inc. purchased the property from the subsidiary in 1971. The property was sold by NL Industries to Gould, Inc. in January 1979. In October of the same year, Gould stopped receiving lead-acid batteries, but continued to process a substantial existing stockpile of batteries. In January 1980, lead refining operations were discontinued. Battery breaking operations ceased on April 1, 1981, lead oxide production ceased in May 1981, and the facility closed entirely in August 1981. By the summer of 1982, most of the structures, facilities, and equipment had been removed.

In 1981 EPA and DEQ began investigating the site, and the site was placed on the Superfund National Priorities list in 1983. In 1985 NL Industries and Gould Inc. signed an Order on Consent with EPA under which NL and Gould conducted a Remedial Investigation (RI) and Feasibility Study (FS) at the site. The final RI report was submitted to EPA in November 1987 and the final FS report was submitted in February 1988.



**Figure 1**  
**General Vicinity Map**

## Site Features

In general, the Gould site is located in an area which is less densely populated than surrounding areas to the northeast and southeast. The site is located in census tract 43, a large tract which parallels the Willamette River for approximately 7 miles. A few widely scattered private residences and rental units are located in a narrow zone between N.W. St. Helens Road and Forest Park, south and west of the study area. The 1985 census data for all of Census Tract 43 shows a total of 425 dwelling units, 380 of which are single family homes. The site is located about 13 miles from the city center of downtown Portland, with a population of over 400,000.

The existing land use in the study area and vicinity is primarily industrial, and generally follows the City of Portland zoning code designations. No significant changes in the area's existing land use patterns are presently planned.

Airflow is usually northwesterly in the Portland area in spring and summer, and southeasterly in fall and winter. The winter season is marked by relatively mild temperatures, cloudy skies and rain with southeasterly surface winds predominating. Summer produces mild temperatures, northwesterly winds and little precipitation. Wind direction at the Gould site is strongly influenced by the topographic features of the hillside southwest of the site. Resulting wind directions tend to be northwest-southeast along the Willamette River. Precipitation in the Portland area is mostly rain. Average rainfall is 37.39 inches. Monthly averages vary from 0.46 inches in July to 6.41 inches in December.

The Gould site is located on the left bank floodplain of the Willamette River, approximately 7 miles upstream from the confluence of the Willamette River and the Columbia River. The floodplain of the Willamette River occupies the lowest portions of the Willamette Valley, which is a broad downwarp between the Cascade and Coast Ranges of northwest Oregon and southwest Washington. In addition to man-made fill, the site is underlain by a few to several tens of feet of alluvial deposits, which in turn overlie the lava flows of the Columbia River Basalt. The site is situated on the northeast flank of the Portland Hills anticline, where the anticline dips beneath the young sediments that fill the Portland Basin. Groundwater flow is generally in a northerly direction.

The Gould site occupies a flat area between the Willamette River on the east and the forested slopes of the Tualatin Mountains to the west. The site is mostly paved with asphalt and is basically devoid of natural vegetation. The vegetation that exists is mostly brush, small trees, and blackberries along the property fence line.

Occurrence of animals at the site is low, since the habitat necessary to support on-site fauna is limited. Common animal species that have been seen on-site include ground squirrels that are resident on the pond, and bird species that feed in the brushy, weedy areas around the site perimeter. Some cattails grow in East Doane Lake.

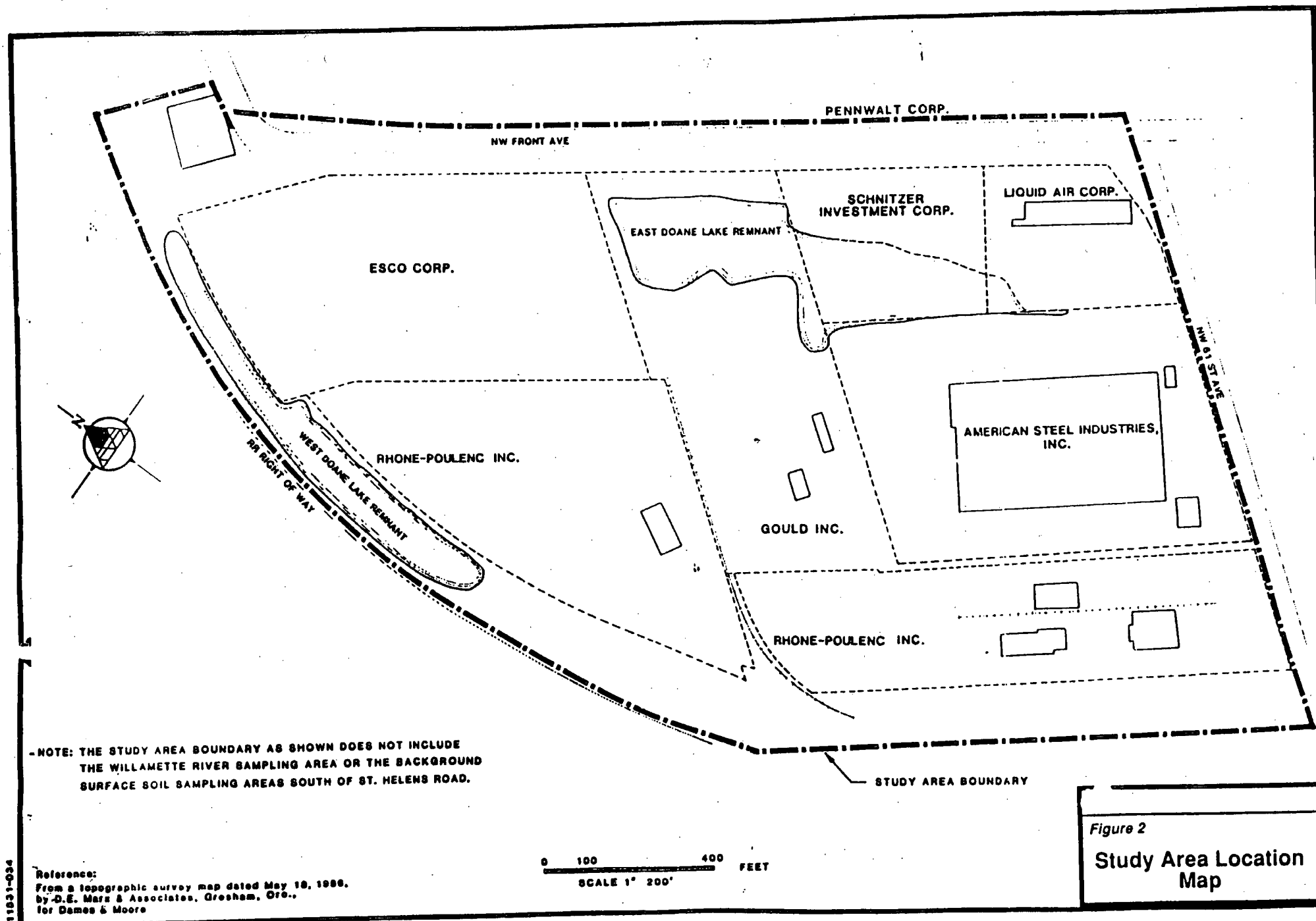


Figure 2

Study Area Location  
Map

It is doubtful that any fish reside in either West or East Doane Lake since natural water sources and discharges are limited. Also, high levels of contamination have resulted in water quality levels that will not support higher aquatic life forms. Some amphibians have been noted in and around the lake. Numerous fish species reside in or migrate through the lower reach of the Willamette River in the vicinity of the site.

## II. ENFORCEMENT SUMMARY

On the current Gould site, a secondary lead smelting facility was completed and went into operation in 1949 under the ownership of Morris P. Kirk and Sons (Kirk & Sons), a subsidiary of NL Industries, Inc. Facility operations consisted of lead-acid battery recycling, lead smelting and refining, zinc alloying and casting, cable sweating (removal of lead sheathing from copper cable), and (after 1965) lead oxide production.

Available records for the period between February 1960 and January 1970 indicate that Kirk & Sons received 14 complaints and/or violations regarding emissions from the facility. A January 29, 1970 report by the Columbia-Willamette Air Pollution Authority expressed concern over levels of lead in the vicinity of Morris P. Kirk, and the potential threat to health caused by continued plant operations.

NL Industries, Inc. purchased the property from the subsidiary in 1971. Three violations for excessive emissions were recorded in 1972. Lead was detected in Doane Lake in 1973, and NL Industries was cited for improper wastewater discharge into the lake. On July 30, 1973, NL Industries curtailed all smelting operations, but the lead oxide still, cable sweater, and refining kettles continued to operate. Available records indicate that the facility operated in compliance with DEQ guidelines during 1974 through 1976.

The property was sold by NL Industries to Gould, Inc. in January 1979. In October of the same year, Gould stopped receiving lead-acid batteries, but continued to process a substantial existing stockpile of batteries. In January 1980, lead refining operations were discontinued. Battery breaking operations ceased on April 1, 1981, lead oxide production ceased in May 1981, and the facility closed entirely in August 1981. By the summer of 1982, most of the structures, facilities, and equipment had been removed.

In 1981 EPA and DEQ began investigations of the site. The site was placed on the Superfund National Priorities List in 1983. In 1985 an order on consent was signed with NL and Gould which involved the performance of an RI/FS at the site.

More recently, Special Notice Letters have been sent to NL and Gould under the authority of Section 122 of CERCLA. Information requests under Section 104(e) have also been sent to industries in the vicinity of the site requesting information on hazardous contaminants and contamination at those facilities. The information received from these companies will be used in designing the additional groundwater and surface water studies described in the selected remedy.

A historical sequence of enforcement related events is presented in Table 1.

TABLE 1  
ENFORCEMENT HISTORY

July 1966	The Air Quality Control (AQC) Division observed heavy emissions of yellow dust for 10 minutes around the Kirk & Sons facility.
Dec. 1966	The AQC observed the baghouse stack emitting an opacity reading of 2 to 3 on the Ringleman scale.
1967	The AQC and the Portland Regional Air Pollution Authority reported six opacity violations from the smelter.
Dec. 1968	The Columbia-Willamette Air Pollution Authority reported a 30-minute violation from the lead sweat furnace stack.
March 1969	The Columbia-Willamette Air Pollution Authority noted a 15-minute violation from the baghouse exhaust stack.
Nov. 1969	Kirk & Sons corrected baghouse emissions from melting kettle and blast furnace.
Jan. 1970	The Columbia-Willamette Air Pollution Authority calculated lead emissions from the Kirk & Sons facility and concluded: "It is apparent that levels of lead in the vicinity of Morris P. Kirk can cause a definite threat to health and should not be allowed to continue."
March-June 1970	The Columbia-Willamette Air Pollution Authority observed two opacity violations.
1971	NL Industries purchased the property from their subsidiary, Morris P. Kirk & Sons. Also, this same year battery manufactures began using plastic for casings.
March 16, 1972	The Columbia-Willamette Air Pollution Authority observed two opacity violations.
March 1973	The DEQ sampled NL facility discharge into Doane Lake; test results indicated 9.5 and 10.3 ppm lead. NL Industries cited for wastewater discharge to Doane Lake.
April 1973	The Columbia-Willamette Air Pollution Authority requested that NL Industries provide a compliance schedule to control emissions from the blast furnace before issuing a new Air Contaminant Discharge Permit. Monitoring and reporting provisions were also a requirement.
July 1973	NL Industries curtailed all smelting operating and remodeled the Portland facility to function as a transfer point to ship and receive goods from Los Angeles. The lead oxide still, cable sweater, and refining kettles continued to operate.



Oct. 1976	Violations for wastewater discharge by NL Industries were corrected.
Aug. 15, 1978	East Doane Lake sampled by DEQ; test results indicated 0.1 and 0.3 ppm lead.
Jan. 1979	Gould Inc. purchased the facility from NL Industries.
Nov. 8, 1979	Preliminary modeling analysis by DEQ suggested Gould may be violating the new ambient lead standard for the lead trailer loading operation.
March 5, 1981	DEQ issued notice to Gould of discharge violations and creating offensive conditions.
April 1981	DEQ obtained two yard-cleaning samples; EP leachate test results indicated 280 and 4,200 ppm lead.
July 1981	DEQ sent notice to Gould of intent to assess civil penalties.
Aug. 1981	Gould facility ceased all operations.
Oct. 30, 1981	DEQ requested that Gould undertake a comprehensive cleanup program.
July 22, 1982	DEQ decided no cleanup of the Gould site was warranted by the groundwater data received to date.
Sept. 24, 1982	DEQ requested that Gould submit a schedule for removing the battery cases from the site and for sampling soil and pond sediments on the site.
Oct. 26, 1982	Gould responded to DEQ request, indicating that they would level and cover the battery casings.
Dec. 1982	DEQ rejected Gould's plan for covering the battery casings.
Feb. 1983	Gould Inc. submitted a letter to EPA objecting to EPA's Hazard Ranking System (HRS) score for the site (see Appendix D). The score had been used by EPA to propose inclusion of the site on the NPL. In particular, the Gould letter objected to the methods used to determine airborne contaminant hazards at the site.
Aug. 1985	Gould Inc. and NL Industries signed Section 106, Administration Order on Consent for the Remedial Investigation/Feasibility Study (RI/FS) of the facility.
April 1986	Work Plan for RI/FS by Dames & Moore was approved and site investigations began.
Nov. 1987	Final RI report submitted to EPA and DEQ.
Feb., 1988	Final FS report submitted to EPA and DEQ.

### III. COMMUNITY RELATIONS SUMMARY

In 1983, Oregon congressional representative Les AuCoin corresponded with DEQ about the site, and DEQ held a meeting with city, county, and state agency officials to present information about environmental concerns in the area and to solicit comments. Representative AuCoin specifically requested that DEQ assure him that site cleanup would completely remove potential contaminants.

A Community Relations plan was prepared for this site in 1985 based on research and interviews with interested community members and officials. The Community Relations Plan identified several issues of concern to the affected community and local officials, including:

1. **Groundwater Pollution.** People were concerned about ground- water contamination in the area and how it might affect future growth of the area.

**EPA responded to this concern by including extensive groundwater testing in the RI.**

2. **Airborne Lead.** Several agency officials indicated that high levels of lead emissions were a primary concern and that high levels of airborne lead could adversely affect the health of nearby workers. Exposure to lead at the approximately 10 houses in the hills above the site was thought unlikely, but necessary to investigate.

**EPA has included air monitoring in the RI.**

3. **Effects on Workers' Health.** Individuals were concerned about exposure through incidental ingestion of ground water obtained for industrial use and exposure to airborne lead.

**EPA has included exposure scenarios for workers in the risk assessment for the site.**

4. **Cleanup Schedule.** Staff from Representative AuCoin's office and a representative from the Oregon State Public Interest Research Group expressed dissatisfaction that cleanup measures had not been implemented earlier.

**EPA has attempted to evaluate the site and make a remedial decision in an expeditious manner. By focusing on the soils unit, a decision will be made now.**

5. **Future Development of the Doane Lake Area.** The media and local officials expressed concern about how the current pollution would affect or restrict future uses of the land.

**Future use restrictions are expected to be minimized by removing or treating as much of the lead at the site as possible.**

6. **Disposal of Dredged Materials from the River.** A representative from the Port of Portland indicated the Port's concern about disposing of dredged materials from the Willamette River that might be found to contain contaminants from the site.

**The RI included an evaluation of sediment around the outfall from East Doane Lake.**

7. Environmental Investigation of Doane Lake Area. A representative from the Association of Oregon Industries and representatives of elected officials indicated concern that DEQ's environmental investigation in the Doane Lake area could decrease future industrial development and jobs in the community.

**No reports of decreased industrial development as a result of these investigations has been received by EPA.**

8. Disposal of Battery Casings. An aide to Representative AuCoin's office expressed dissatisfaction that battery casings had not been removed from the site. Representatives from the Portland Department of Public Works cautioned that any plan to dispose of waste materials at St. John's Landfill would be unpopular.

**EPA intends to recycle as much of the battery casing components as is feasible.**

Throughout the course of the RI/FS, additional updates were provided to the public during the investigation and reporting phases. A proposed plan and notice of public hearing was published in the Oregonian on February 8, 1988. The public comment period for the site was from February 8 through March 18. Two public meetings were held to discuss the results of these studies and EPA's proposed plan: the first on February 18, 1988 and the second on March 10, 1988. At both meetings, there was clear community support for thorough cleanup of the site and contaminated groundwater. The results of these meetings will be discussed further in the Responsiveness Summary (Appendix B).

#### **IV. NATURE AND EXTENT OF PROBLEM**

##### **Contaminants Evaluated**

During the scoping of the RI/FS, the emphasis at this site was on metals contamination from the battery recycling operations. Of primary importance was the presence of lead in each of the media. Although groundwater in this area also has organic chemical contamination, that contamination was not evaluated in these studies. As part of the selected remedy, additional work is proposed for the groundwater which will take into account organic chemical contamination. The purpose of this additional work will be to determine what, if any, remediation actions are required for the surface water and groundwater at the site.

Contaminated media at the Gould site that were investigated include battery casings, matte, surface soils, subsurface soils, lake sediments, surface water, and groundwater.

## Extent of Contamination

**Battery Casings and Matte.** The lead smelter on the Gould property operated between 1949 and 1973. During this period, a daily production of approximately 35 to 40 tons of lead has been reported. An average of 1,500 batteries were processed daily. As a result of these production records and the RI investigation, a total of 86,900 tons of battery casings and 6,570,000 gallons of acid were estimated to be disposed of at the site.

In addition to acid and battery casings, a third waste product called matte was produced by the smelting operation. Matte disposal is estimated at 11,800 tons. This material was reportedly used as fill only on the Gould site, just to the northeast of the facility.

Much of the battery casing fragments produced during this period (1949-1973) were disposed off site on the Rhone-Poulenc property. The quantity of battery casing materials disposed was calculated using test pits and a fill thickness contour map. Table 2 summarizes the locations and estimated quantities of battery casings. Figure 3 shows the locations of the battery casings and matte within the study area.

TABLE 2

### BATTERY CASINGS QUANTITIES AND LOCATIONS

Gould Property (1949-1973)	41,300 cu yds	44,500 tons
(post-1973)	11,100 cu yds	12,000 tons
Surface Piles	1,700 cu yds	1,600 tons
Rhone-Poulenc Property	26,700 cu yds	28,200 tons
Totals	80,800 cu yds	86,900 tons

The batteries consist of hard rubber, ebonite, plastic casings, metallic lead, and lead oxides. Lead concentrations (mostly lead oxide) ranged from 7,600 mg/kg (0.76 percent) to 190,000 mg/kg (19 percent). All of the battery casing samples had EP Toxicity results for lead above the regulatory limit (EP Toxicity limit = 5.0 mg/l). These values ranged from 21 mg/l to 220 mg/l. There was no apparent correlation between total lead concentration and EP Toxicity leachate lead concentration. The EP Toxicity results for arsenic, chromium, and cadmium were below detection limits.

About 2% of the total volume of battery casings is located in surface piles on the Gould property, the remaining 98% is part of the fill on the Gould and Rhone-Poulenc properties. These subsurface casings are in direct contact with groundwater underneath the site. The characteristics of the surface piles of casings differ from the subsurface piles. The surface piles contain a higher percentage of plastic and metallic lead relative to subsurface casings on the Gould property or from the Rhone-Poulenc property, which contain a higher percentage of rock and slag. The metallic lead, plastic, ebonite and lead oxide components of these casings are potentially recyclable. The estimated fractions of the various components in the surface and subsurface casings are shown in Table 3.

TABLE 3

## ESTIMATED BATTERY COMPONENT QUANTITIES

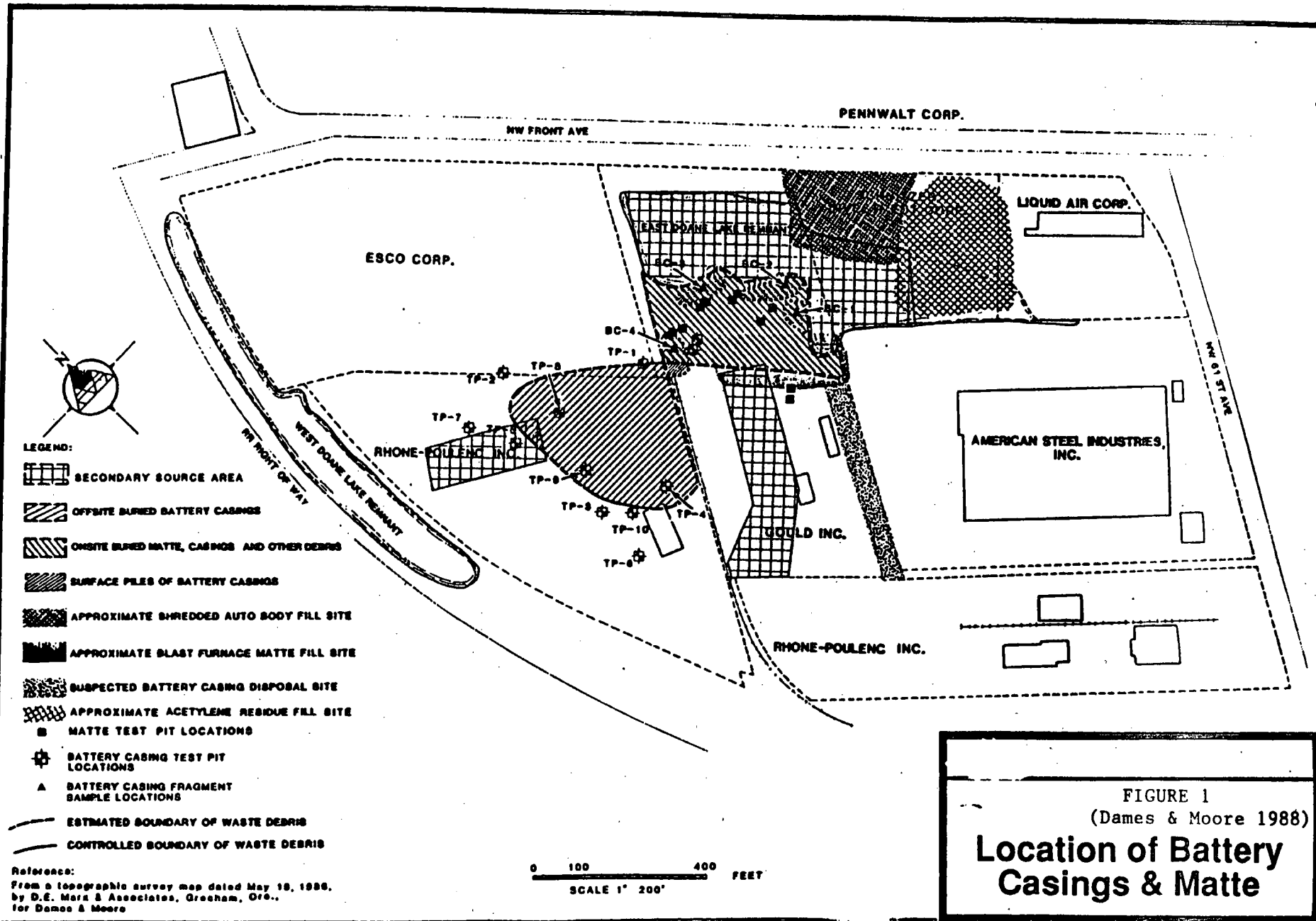
Rhone-Poulenc & Gould Subsurface	In-Situ Density lbs/cu. ft.	In-Situ Volume cu. yds.	Tons	Per Cent (weight)
Ebonite	68.00	69,008	63,349	74.3
Plastic	46.56	4,070	2,558	3.0
Metallic Lead	297.46	117	469	0.6
Lead Oxide/Mud	238.37	2,703	8,700	10.2
Rock/Slag	105.56	1,938	2,762	3.2
Other	74.28	1,264	1,268	1.5
Moisture	62.30	0	6,113	7.2
Subtotal	79.80	79,100	85,218	
<u>Gould Surface</u>				
Ebonite	65.81	899	799	50.0
Plastic	45.06	595	362	22.5
Metallic Lead	287.88	6	24	1.5
Lead Oxide/Mud	230.69	52	161	10.0
Rock/Slag	102.16	148	204	12.7
Other	71.89	0	0	0
Moisture	62.30	0	59	3.7
Subtotal	70.07	1,700	1,609	
Total	79.60	80,800	86,827	

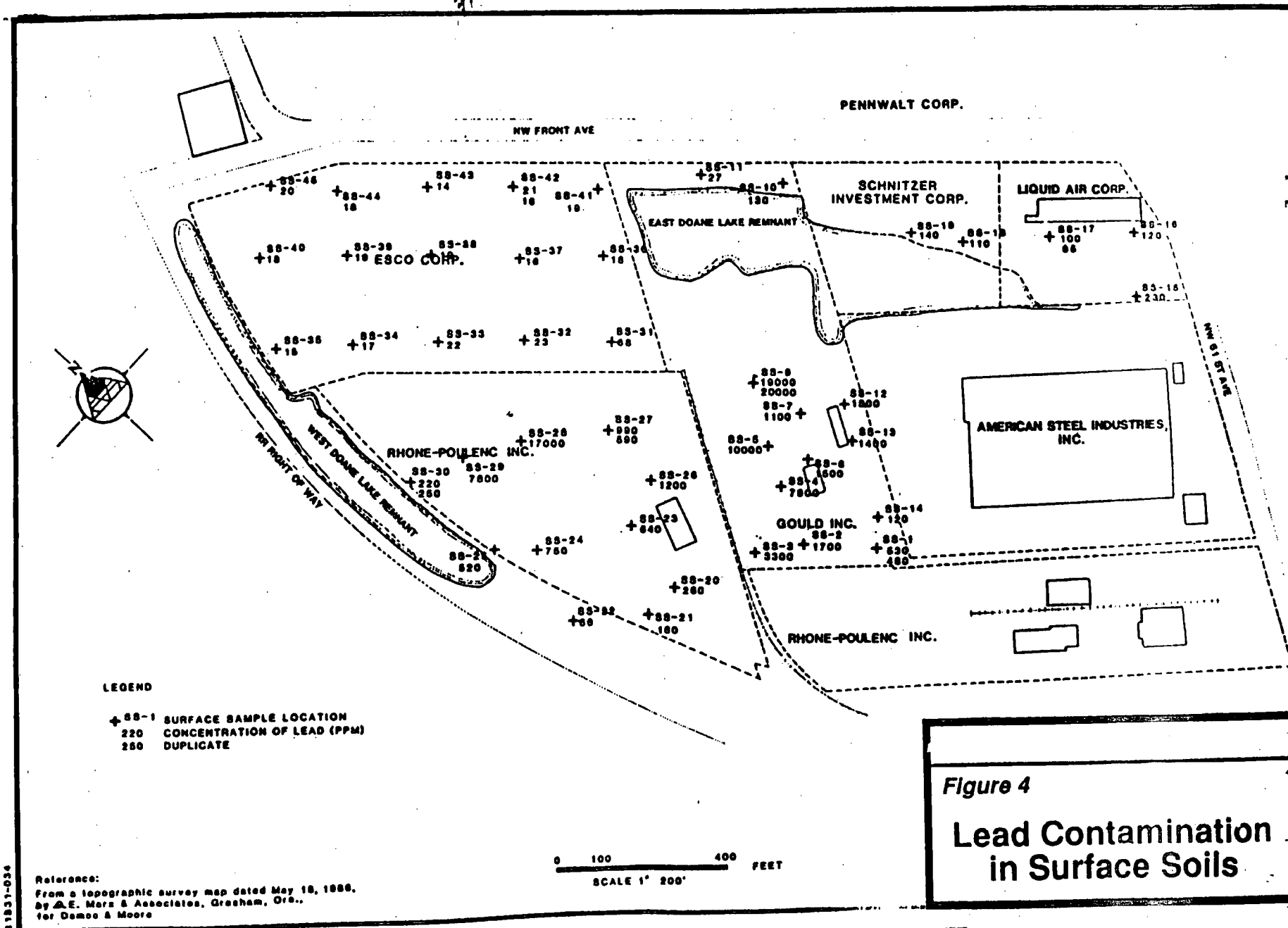
The matte materials consist of metallic sulfide chunks primarily containing iron and lead. Lead concentrations in the matte samples ranged from 6.4 percent to 11 percent. All of the samples had EP Toxicity results for lead above the regulatory limit of 5.0 mg/l. Low concentrations of arsenic and cadmium were detected in the EP Toxicity leachates. These concentrations were within the regulatory limits (5.0 mg/l and 1.0 mg/l, respectively).

Surface Soils, Subsurface Soils, and Sediments

In addition to battery casings and matte, large quantities of soil at the site are contaminated with lead and can serve as secondary sources for lead transport. The quantities of surface soil, subsurface soil, and sediment considered to be secondary sources were estimated by using total lead and EP Toxicity data.

Figure 4 shows the areas of surface soil that were identified as secondary source areas using the above total lead criteria. The quantity of surface soil on the Gould property considered a secondary source is approximately 2,400 cu yds. The quantity on the Rhone-Poulenc property is approximately 970 cu yds. These quantities are based on a 3,000 ppm lead level in soils. Criteria for surface soils in the selected remedy are based on a lower lead level and as a result actual volumes determined in design may be higher than these estimates.





The volumes of subsurface soils estimated to be secondary sources are as follows:

1. One foot of soil below the entire area of the battery casing/matte excavations. This would amount to 4,300 cu yds from the area on Rhone-Poulenc property and 5,000 cu yds from the area on the Gould property; and,
2. One foot of soil from the sides of the excavations. Assuming average excavation depths of 20-feet on the Rhone-Poulenc property and 25-feet on the Gould property, and an excavation side-slope ratio of 2:1, this would amount to approximately 2,170 cu yds from the Rhone-Poulenc property and 2,180 cu yds from the Gould property.

Sediment samples collected from East Doane Lake contained total lead concentrations ranging from 160 mg/kg (parts per million) to 12,000 mg/kg. The estimated quantity of secondary source material in East Doane Lake is 5,500 cubic yards. West Doane Lake sediments are not considered secondary sources.

Sediments collected in the Willamette River during August 1986 and February 1987 had generally low metals concentrations. Total lead concentrations ranged from 26 to 56 mg/kg. Other metals concentrations included total arsenic at 5.7 to 6.2 mg/kg, total chromium at 9 to 26 mg/kg, and total zinc at 72 to 82 mg/kg. Cadmium and hexavalent chromium concentrations were near or below the detection limits. Like the West Doane Lake sediments, Willamette River sediments are not considered secondary sources. The total quantity of soil considered secondary source material is summarized in Table 4.

TABLE 4  
ESTIMATED SECONDARY SOURCE VOLUMES

TYPE AND LOCATION		QUANTITY (cu yds)	
<hr/>			
<u>Surface Soil</u>			
Gould property		2,400	
Rhone-Poulenc property		970	
Surface Soil Total		3,370	3,370
<u>Subsurface Soil</u>			
Gould property		5,000	
Bottom Sides		2,180	
Sub-total		7,180	
Rhone-Poulenc property		4,300	
Bottom Sides		2,170	
Sub-total		6,470	
Subsurface Soil Total		13,650	13,650
<u>Sediment</u>			
East Doane Lake	5,500	5,500	
Secondary Source Total			22,520



Surface Water. Surface water in the study area consists of two remnants of Doane Lake. The two remnants are referred to as East Doane Lake and West Doane Lake (see Figure 2).

Direct precipitation and precipitation runoff from surrounding properties are the only sources of surface water to the lake remnants. Groundwater recharge also contributes water to the remnants. Their surface elevation rises and falls seasonally with rainfall and presumable groundwater recharge. However, there is no simple relationship apparent between precipitation and lake level.

East Doane Lake discharges via a drain pipe to the north beneath N.W. Front Street; the discharge enters the Willamette River approximately 200 feet east of the railroad bridge. There is no known surface discharge from the West Doane Lake remnant.

Surface water in East Doane Lake exceeds the lead drinking water standard of 0.05 mg/l. Surface water concentrations were as high as 0.28 mg/l. Levels in West Doane Lake were below the standard.

Ground Water. The site hydrostratigraphy includes unconsolidated fill and alluvial deposits overlying basalt flows. The fill consists largely of sands and gravels, silts, and an abundance of slag, bricks, metal parts, and battery casings. The alluvial deposits consist predominantly of clays, silts and sands with the silt content generally increasing with depth. The basalt flow beneath the fill and alluvial deposits is thought to be fractured and weathered. Ground water occurs in the fractured and weathered portions of the basalts.

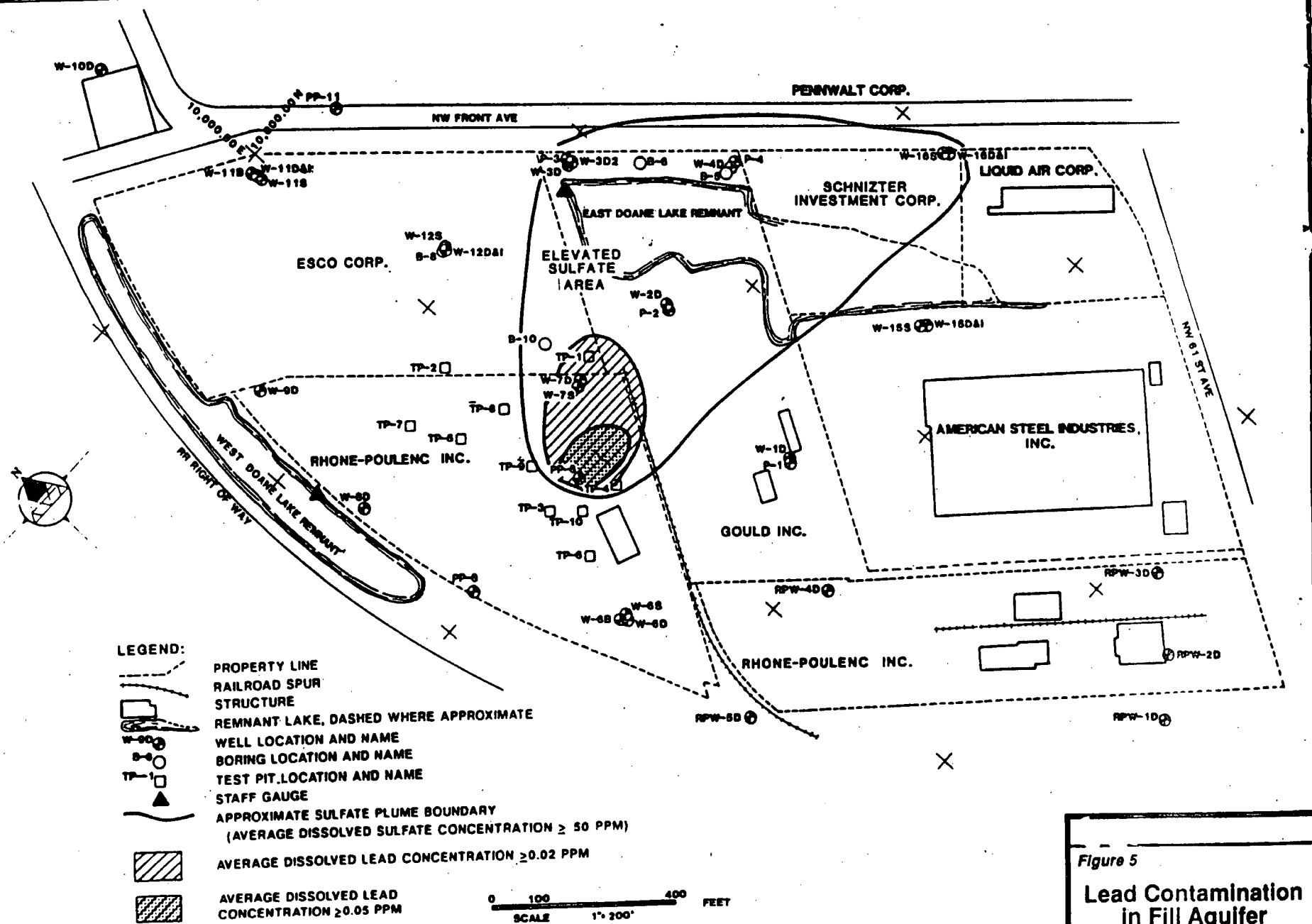
The fill and alluvial deposits form an interconnected, heterogeneous, and anisotropic aquifer. The fill and alluvial water-bearing zones are believed to be generally unconfined; however, due to the layering, heterogeneity, and anisotropy there may be locally confined conditions within the aquifers.

Four water-bearing units are identified beneath the site. These units are the fill, the upper alluvial, the lower alluvial, and the basalt water-bearing units. In the upper aquifers there is a significant component of downward flow, although flow at the basalt-alluvial interface appears to be from the basalt to the alluvial aquifer.

Groundwater Contaminant Delineation. Figures 5,6 and 7 show the extent of lead contamination in the fill and alluvial aquifers. The contours show where dissolved lead concentrations exceed the MCL of 0.05 mg/l as well as the MCLG of 0.02 mg/l. The sulfate plume that has resulted from disposal of battery acid is also shown.

The relationship between dissolved metals, sulfate concentrations and pH is similar in both the fill and alluvial aquifers. Both show elevated dissolved metals and sulfate levels in association with lower pH values.

In the upper alluvium, the lead plume has migrated at least as far north as well 10D, shown in Figure 6. Increased dissolved metal concentrations appear to be the result of the lower pH which increases the solubility of metals, thus carrying high levels of lead as the "plume" migrates. Total lead migration from the site is estimated to be from 0.3 to 0.6 lb/yr.



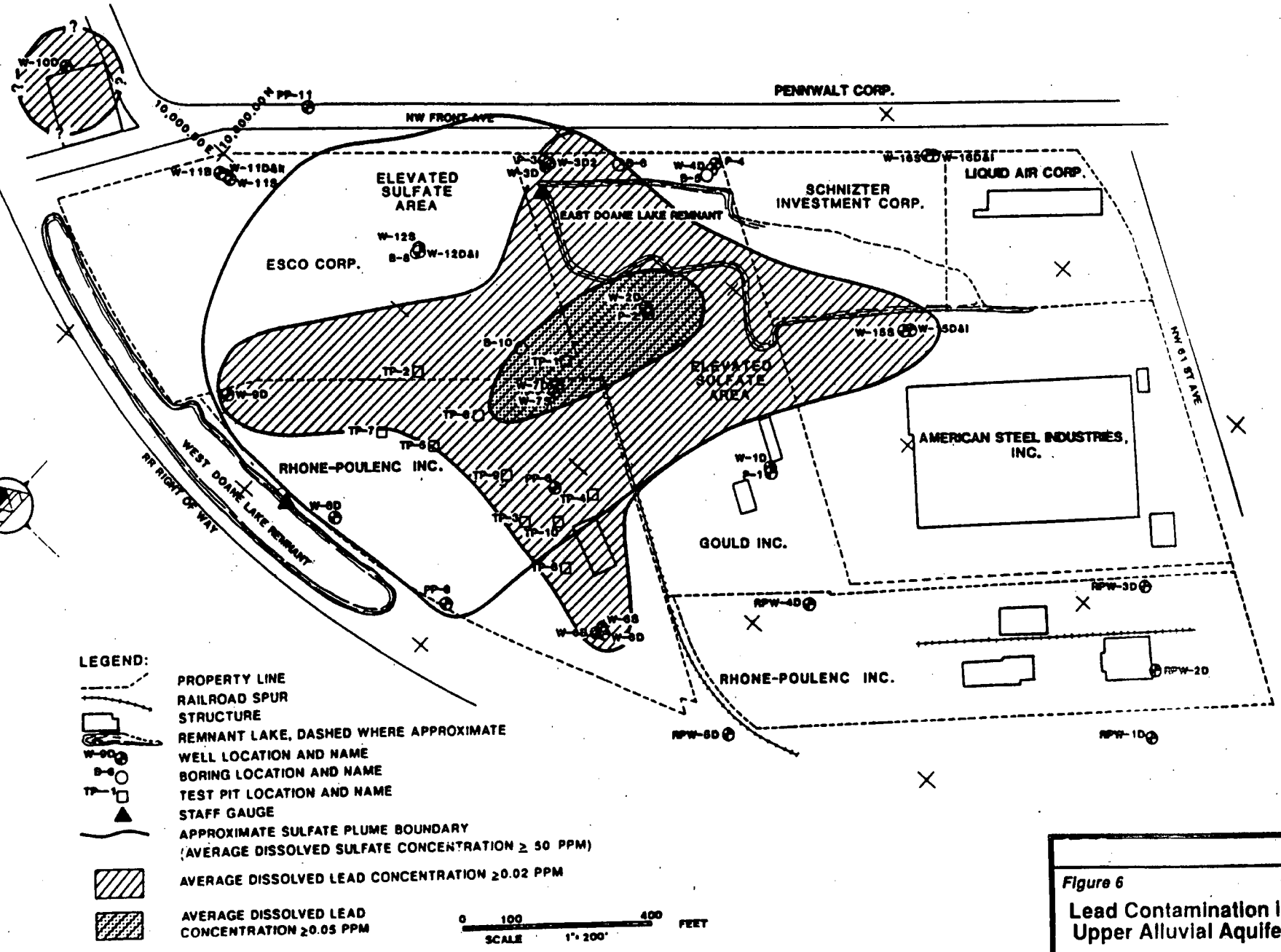


Figure 6  
Lead Contamination in  
Upper Alluvial Aquifer



### Treatability Studies on Casings and Contaminated Soils

As part of the Feasibility Study, several engineering studies were performed to determine whether the SARA preference for treatment could be met. A bench-scale soil stabilization study was performed by Weston Services, Inc. Weston used several different reagents to determine the applicability of the soil stabilization technique to site soils and lake sediments. The results showed that admixtures of Portland cement, cement kiln dust, and lime kiln dust with the soil and sediment at specific increments improved the consistency and structural stability of the soils and sediments, and also reduced the leachability of the contaminated materials to levels generally below hazardous waste designation levels.

Three battery casing separation tests were performed on site materials. One test was performed on equipment manufactured by MA Industries, Inc. and the other two on equipment manufactured by Poly-Cycle Industries, Inc. To conduct each test, representative material was excavated from the site and shipped to locations where equipment manufactured by the two companies is in use. In the case of MA Industries, the test was run on equipment operated by Ace Battery Company of Indianapolis, Indiana. The tests of Poly-Cycle equipment were run at the Poly-Cycle plant in Jacksonville, Texas. The studies show that much of the battery casing material is potentially recyclable, however, additional design work will be required to modify the pilot facilities used in the treatability studies to actual conditions at the site. Reasonable physical separation of the plastic and ebonite components with some equipment modifications appears to be possible, although the degree of metallic lead contamination of ebonite may be high even after separation; additional design work will be required to modify the process to treat the ebonite stream in order for it to pass the EP Toxicity test.

During the evaluation of alternatives, similar tests were run independently by researchers working on materials from the United Scrap Lead Superfund site near Troy, Ohio. Researchers there performed bench-scale tests using various solutions and mechanical cleaning steps to determine the amenability of lead to be removed from the ebonite material. The results of this test are generally favorable indicating that the ebonite stream can be cleaned. However, the researchers have concluded that more work is required before the bench-scale results could be applied to any field-scale unit. This is a typical requirement for any bench scale testing.

### Contaminant Transport and Need for Additional Study

Two types of lead sources exist at the Gould site. The major source includes debris remaining from earlier lead recovery operations, including battery casings and parts and the smelter matte. Secondary sources which may be significant include surface, sediment, and subsurface soils near the industrial sources. These materials may act as a source for lead in ground water, surface water or air after the primary (industrial) sources have been removed or stabilized.

Groundwater Transport. The most important chemical change encountered in the groundwater system on (and near) the site is pH change. At the primary sources, the pH is generally quite low (pH <5) because of the sulfuric acid from the scrapped batteries. As pH increases, the solubility of lead in water decreases, accompanied by the precipitation of lead oxides and hydroxides.

The amount of lead that can be dissolved in ground water is a function of temperature, pH, other dissolved species present, amount of available lead and contact time. Assuming temperatures to be constant, all these factors are significant with regard to lead solubility in ground water in the study area. Based on these factors, an estimated migration rate of 0.3 to 0.6 lb/yr was derived during the RI.

Airborne Transport. The potential for airborne contamination comes from the surface piles of casings and contaminated surface soils at the facility. During the RI, the highest daily ambient lead values observed were 5.20 ug/m<sup>3</sup>. This is above the NAAQS of 1.5 ug/m<sup>3</sup>. The highest monthly average airborne lead concentrations observed were 1.56 ug/m<sup>3</sup> and 0.94 ug/m<sup>3</sup>. The highest quarterly average airborne lead concentration was 0.56 ug/m<sup>3</sup>. These results indicate that dry weather and disturbance of site materials may cause airborne transport of lead containing materials.

Need for Additional Study The exact nature of lead migration has not yet been well characterized. For that reason, additional investigations of the groundwater and surface water unit at this site are recommended in the selected remedy. The proposed additional work will involve expanding the area for groundwater and surface water monitoring and including organic chemical contamination in the evaluation of groundwater quality.

### Endangerment Assessment

Human Health Effects. An endangerment assessment was performed to evaluate the potential for human health and environmental exposure risks associated with the no-action alternative as well as the remedial action alternatives. The primary contaminants included in the assessment are lead, along with arsenic cadmium, chromium and zinc. Arsenic is treated as a carcinogen for both inhalation and ingestion routes, while cadmium is treated as a carcinogen for only the inhalation route. As part of the endangerment assessment, a screening analysis for these other contaminants was performed based on the values found at the site and the relative toxicity of these compounds compared to lead. As a result of this screening, risks from lead exposure were found to dominate risks from exposure to the other chemicals. Lead was selected as the indicator compound for assessing risk and evaluating the various remedial alternatives.

Three potential critical pathways were identified, including airborne exposure from on-site fugitive dust sources, incidental oral ingestion of contaminants, and dermal contact as well as incidental ingestion of lead from surface water in East Doane Lake. No exposure from drinking water was included. Groundwater contamination will be evaluated further in the additional work proposed under the selected remedy.

Inorganic lead may be absorbed by inhalation or by ingestion. Absorption by either route contributes in an additive fashion to the total body burden. Among adults, inhalation is the more efficient of the two mechanisms. The fraction of inhaled lead absorbed from the respiratory tract is approximately 40 percent, while the fraction of ingested lead absorbed from the gastrointestinal tract is approximately 10 percent. These rates may be higher in children and are of particular relevance in assessing exposures in this sensitive subpopulation.

Lead is highly persistent in the environment and is bioaccumulative. When lead is first absorbed, it enters the bloodstream and is dispersed unevenly in the body among blood, soft tissue, and bone. Approximately 90 percent of the lead in blood is bound to the red blood cells. The overall half-life of lead in blood has been calculated to be  $36 \pm 5$  days. Lead is excreted from the blood into the urine. Lead in soft tissue has a calculated mean half-life slightly less than that in the blood and is excreted by alimentary tract secretions, hair, sweat, and nails. Most lead absorbed into the human body is deposited in the bone. Lead in the bone is calculated to have a half-life of approximately 10,000 days (27 years).

The toxicology of lead has been extensively reviewed. Alterations in the hematopoietic (blood forming) and central nervous systems are the primary toxic effects caused by exposures to lead. Cognitive and behavioral deficits are the focus of much current research on relatively low levels of lead exposure.

The Centers for Disease Control (CDC) has determined that a blood lead level in children of 25 ug/dl or above indicates excessive lead absorption and constitutes grounds for medical intervention. That determination is based on the occurrence of enzymatic abnormalities in the red blood cells at blood lead levels above 25 ug/dl and by the finding of neurologic dysfunction in children at blood lead levels between 35 and 50 ug/dl. Further, the CDC defines childhood lead poisoning at a blood lead level of 25 ug/dl in association with an erythrocyte protoporphyrin (EP) level of 35 ug/dl or above (CDC 1985). In its draft toxicological profile for lead, CDC has also cautioned that concentrations greater than 500-1000 ppm could lead to elevated blood lead levels in children inhaling or swallowing dirt. Recent findings of cognitive deficits associated with lower blood lead concentrations may result in a review of the adequacy of the existing CDC threshold level. EPA has issued a revised maximum contaminant level goal (MCLG) of 20 ug/liter lead. The current MCL of 50 ug/liter is used to derive an acceptable intake chronic (AIC) risk criterion for ingestion of lead.

Based on discussions with EPA and following the noncarcinogenic risk evaluation procedures of the Superfund Public Health Evaluation Manual, Acceptable Intake: Chronic (AIC) values were used to assess the significance for human health of potential inhalation and ingestion exposures to lead calculated for the Gould Inc. site. AIC criteria are designed to represent an intake for a contaminant that would be acceptable on a long-term continuing basis without producing adverse health effects. Separate AIC values for inhalation and ingestion exposures are derived by EPA from the National Ambient Air Quality Standard (NAAQS) for lead (1.5 ug/m<sup>3</sup> quarterly) and the drinking water standard for lead (0.05 mg/l), respectively. Each AIC is calculated as the environmental criterion concentration times contact rate divided by adult body weight. Assuming 20 m<sup>3</sup>/day of air breathed, 2 liters/day of water ingested, and an adult body weight (bw) of 70 kg, the derived AIC values are 0.0004 mg/kg-bw/day for inhalation and 0.0014 mg/kg-bw/day for ingestion. For each calculated exposure dose (in mg/kg-bw/day) in this endangerment assessment, risk is represented by a hazard index (HI) number equal to the calculated dose divided by the appropriate AIC value. Thus, a hazard index greater than 1.00 represents a calculated dose greater than the AIC criterion value, given the exposure model assumptions and the environmental concentrations used in the model.

Figure 8 provides a visual summary of the results of the exposure calculations for the No-Action Alternative. Inhalation and ingestion exposures for each scenarios are scaled appropriately in comparison to AIC values. As Figure 8 shows, the high dose cases for ingestion of soils indicate extremely high intakes of lead. These intakes result from calculations assuming contact with the lead oxide--almost pure lead--in the battery casing waste piles. Even if more realistic assumptions than continuous daily contact with the waste piles are made, the results of any contact with and ingestion of contaminants from the battery casing piles would be significant in comparison to either baseline exposures or ingestion AIC values. The high dose ingestion calculations are not considered to be a basis for evaluation of potential health impacts from the site (they are excessively conservative); however, they clearly demonstrate the potential significance of any contact with the existing source materials on site.

For on-site workers (adults only), total lead intake increases to about 2.5 times baseline intake, with inhalation exposures increasing by a greater percentage than ingestion exposures but still accounting for less than 10 percent of total exposures. Both inhalation and ingestion mean dose exposures are lower than AICs. Off-site residential total lead intake increases only marginally for adults or children (about 14 percent). Only inhalation exposures are included in this scenario, with the ambient air lead concentration assumed to be constant at  $0.33 \text{ ug/m}^3$ , or 22 percent of the NAAQS value of  $1.5 \text{ ug/m}^3$ . In the on-site residential base case scenario, adult lead intake increases almost fivefold and children's lead intakes by a factor of more than 11. Both inhalation and ingestion exposures are substantially increased in all age intervals; all hazard indices for children and adults are greater than 1.00, with a maximum of 11.2 for inhalation and 34.2 for ingestion among children's age intervals.

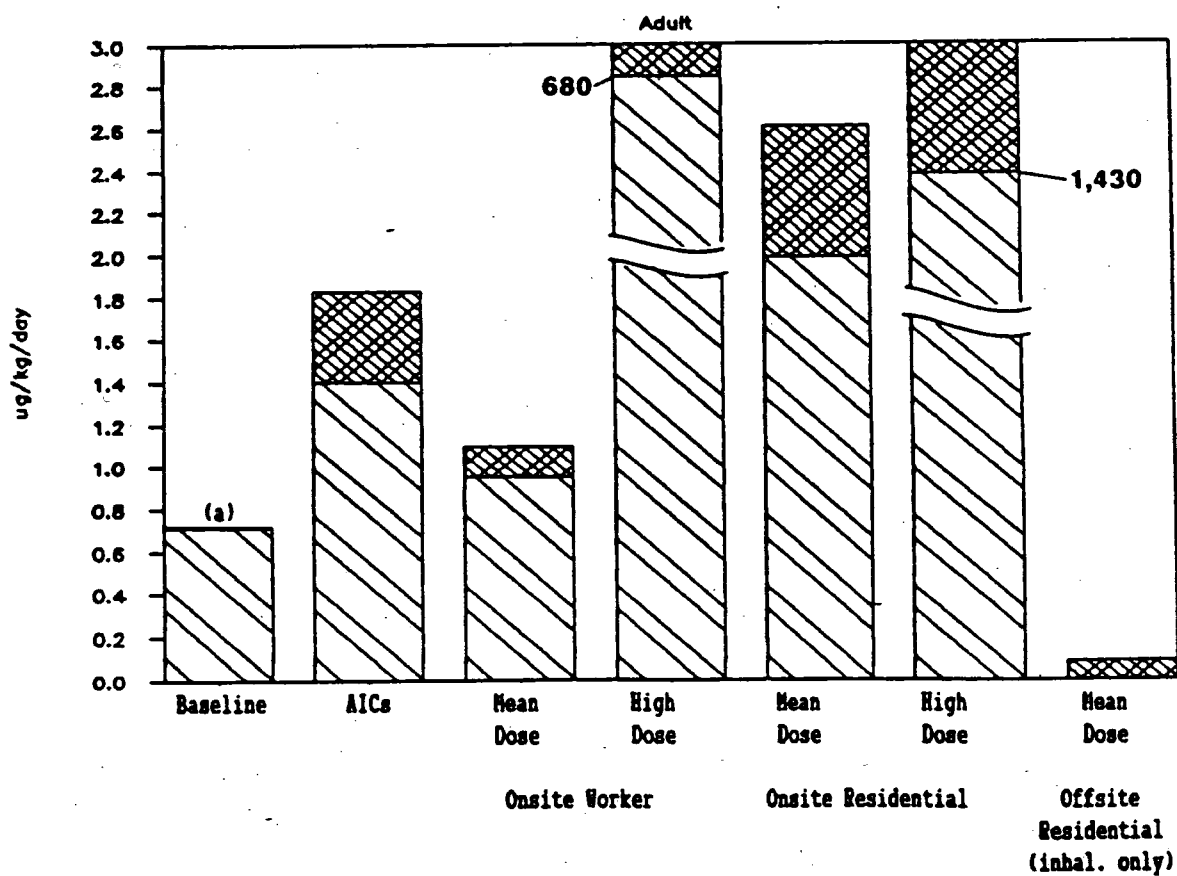
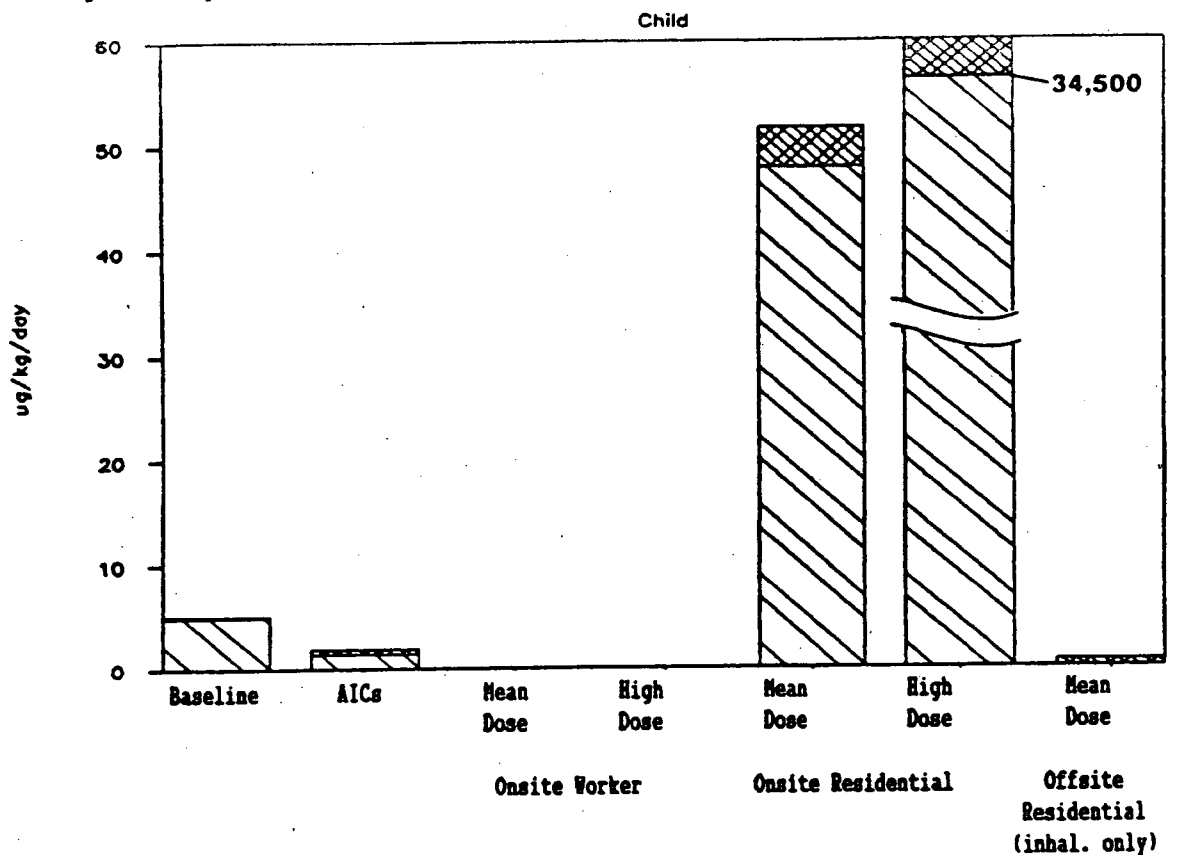
Environmental effects. It is doubtful that any fish reside in either East or West Doane Lake. During field sampling activities, numerous aquatic insects and frogs were observed in the West Doane Lake. None were observed during concurrent sampling in the East Doane Lake, although mallards are reported to be resident there. Numerous fish species reside in or migrate through the lower reach of the Willamette River in the vicinity of the site. These include migrant Chinook and Coho salmon, and Steelhead and American shad. Resident species include largemouth and smallmouth bass, crappie, bluegill, walleye, northern squawfish, catfish, mountain whitefish, carp, sucker, peamouth, and chiselmouth (Oregon Department of Fish & Wildlife 1972, 1986).

The Willamette River in the site reach flows through a highly industrialized area that receives a variety of point- and non-point source pollutants. Dissolved lead values upstream of the area of the discharges from the Gould site have exceeded the chronic aquatic life standard of  $1.3 \text{ ug/l}$  in some 45 percent of the samples from the past decade (USGS 1975 - 1984 data). Total recoverable lead values have been still higher. Levels of lead have trended downward with no values greater than  $2 \text{ ug/l}$  in the last three years of this period.



NO ACTION ALTERNATIVE  
INCREMENTAL AVERAGE DAILY DOSE  
BY EXPOSURE SCENARIO  
(in ug/kg/day)

Figure 8  
Summary of Exposure Calculations



(a) Inhalation value too small to be visible.

▨ Ingestion

▨ Inhalation

Estimates of the quantity of surface water overflow from the East Doane remnant indicate a maximum value of 7,800,000 gallons per year. Using a range of discharge values, dilution calculations were made to estimate the distance downstream of the outfall at which the concentration in a plume within the Willamette River will reach background levels. Using the above estimates, the plume where lead values measurably exceed background could be several thousand feet long and up to 100 feet wide.

Few recent data are available on fish populations in the vicinity of the Gould discharges; however it is likely that these populations reflect the stresses of the existing habitat. Of primary economic and recreational concern are effects on anadromous (migratory) salmonids. Both juveniles and adults migrate past the site on their way to and from upstream spawning areas. Because of the shallowness of the beach adjacent to the discharges, adults would not be expected to move through concentrated areas of the plume and should suffer little impact from their limited exposures. Thus, it is likely that a significant percentage of outmigrating juvenile salmonids will pass through the plume. Expected residency in the plume would be on the order of minutes if actively migrating or hours if passively drifting down current. Exposures of this duration may cause some minor stress to respiration and metabolism but would not be expected to result in significant numbers of deaths unless a fish were somehow trapped for an extended period in a region with very high concentrations. The EPA criterion for short-term exposure (1 hour) is 0.034 mg/l.

## V. ALTERNATIVES EVALUATION

### Summary of Alternatives and Evaluation Criteria

This section summarizes the detailed evaluation of the final candidate remedial action alternatives. First, alternatives are subject to a screening for compliance with the protectiveness and ARAR criteria. An additional screening of cost effectiveness is then done to ensure the the selected remedy is a cost effective one. Those that pass the screening are then evaluated against all nine criteria and an alternative is selected that best addresses the combination of criteria. This alternative is considered to represent treatment to the maximum extent practicable.

The Final Candidate Alternatives, identified briefly, are:

Alternative 1 - No-Action Alternative (presented to provide a baseline for evaluating the other alternatives).

Alternative 2A - Removal and Disposal of Surface Piles of Battery Casings; Lime Application to Contaminated Soils.

Alternative 2B - Removal and Disposal of Surface Piles of Battery Casings; Capping of Contaminated Surface Soils; Regrading of the Site and Isolation of East Doane Lake.

Alternative 2C - Excavation and Separation of Surface Piles of Battery Casings, and Subsequent Off-Site Management of Casings; Lime Treatment; Capping of Contaminated Surface Soils; Treatment of Surface Water; and Regrading and Revegetation of the Site.

Alternative 8A - Removal and Disposal of Surface Piles of Battery Casings and Sediments of East Doane Lake; Capping of Contaminated Surface Soils; Treatment of Surface Water; and Regrading and Revegetation of the Site.

Alternative 8B - Excavation and Separation of Surface Piles of Battery Casing Components, and Subsequent Off-Site Management of Casings; Capping of Contaminated Surface Soils; Treatment of Surface Water; and Regrading and Revegetation of the Site.

Alternative 10A - Excavation and Separation of all Battery Casings, and Subsequent Recycle of Some Casing Components; On-Site Incineration of Non-recyclable Components; Fixation or Stabilization of Surface Soils, Subsurface Soils, Sediments, and Matte; Treatment of Surface Water.

Alternative 10B - Excavation and Separation of all Battery Casings, and Subsequent Recycle of Some Casing Components; Incineration of Non-recyclable Battery Casing Components; Lime Treatment and On-Site Placement of Sediments; Treatment of Surface Water.

**Alternative 10C - Excavation and Separation of all Battery Casings, and Subsequent Recycle of Some Casing Components; Off-Site Disposal of Non-recyclable Components that Fail EP Toxicity; Fixation or Stabilization of Surface Soils, Subsurface Soils, Sediments, and Matte; Additional Study of Groundwater and Surfacewater Quality.**

**Alternative 21 - Excavation of Battery Casing Components and Permanent Disposal in an On-Site RCRA Landfill; Fixation or Stabilization of Surface Soils, Subsurface Soils, Sediments, and Matte; Treatment of Surface Water.**

**Alternative 25 - Permanent Disposal in an On-Site RCRA Landfill of all Site Contaminated Materials, including Battery Casing Components, Surface Soils, Subsurface Soils, Sediments, and Matte; Treatment of Surface Water.**

### **Evaluation Criteria**

Nine factors will be considered in evaluating the Final Candidate Alternatives:

- Long-term effectiveness and permanence;
- Reduction in toxicity, mobility or volume;
- Short-term effectiveness;
- Implementability;
- Cost;
- Overall protection of human health and the environment;
- Compliance with applicable or relevant and appropriate requirements (ARARs) that are shown in Appendix A;
- State acceptance; and
- Community acceptance.

The process begins by applying the protectiveness and ARAR factors to each of the candidate alternatives. Alternatives that do not satisfy these requirements will be screened out. Then a cost effectiveness screening is done to ensure that each of the alternatives would be a cost effective solution to the problems at the site. Finally, for the remaining alternatives which have passed these screening steps, all of the factors are weighed in determining the best overall solution to be applied at this site.

### Screening of Alternatives

#### Alternatives 1, 2A, 2B, 8A, and 8B

These alternatives fail the protectiveness and ARAR screens for the following reasons:

- The alternatives rely heavily on institutional controls and monitoring for the protection of public health and the environment.
- Uncontrolled wastes would be left in place on site.
- Extensive continued migration of site contaminants into the groundwater aquifers will occur.
- The alternatives fail to meet ARARs.

#### Alternative 2C

Although Alternative 2C has many of the same disadvantages of the above alternatives, it involves some treatment of the remaining contaminated material at the site and is therefore considered more protective than the above alternatives. The alternative fails the EP Tox ARAR, and a waiver in this instance would be required. Since alternative 2C is the preferred alternative in the FS report submitted by NL and ~~NS~~ould, it will be carried through the evaluation process.

#### Alternatives 10A & 10B

These two alternatives pass the protectiveness and ARARs screens. However, the alternatives each involve incineration of the ebonite casings. Due to expected opposition from the community and the State of Oregon, these two remedies are also being screened out at this point.

#### Alternative 10C

This alternative passes the protectiveness/ARAR screening and will be evaluated in more detail.

#### Alternatives 21 & 25

These alternatives pass the protectiveness/ARAR screening. They are in fact quite similar alternatives, with the one difference being that in Alternative 21 the soils and sediment are treated before being placed in the RCRA landfill. Since alternative 21 appears to go further in satisfying the preference in the law for treatment to the maximum extent practicable, and since it is later shown to be cost effective, only 21 will be evaluated in detail.

### Screening for Cost Effectiveness

The alternatives which pass the initial screening screen are 2C, 10C, and 21. These are then evaluated to determine if any one fails to provide for a solution that is cost effective. The evaluation for these is shown in Table 5.

TABLE 5  
SUMMARY OF COST EFFECTIVENESS SCREENING

<u>Factor</u>	<u>Alternatives Evaluated</u>		
	<u>2C</u>	<u>10C</u>	<u>21</u>
Cost	\$4,923,481	\$20,565,184	\$15,661,848
Effectiveness	Moderate	High	Moderate
Reduction in Toxicity, Mobility or Volume	Low	High	Moderate

The costs for Alternative 10C are extremely difficult to estimate. The above costs have been prepared by the Dames & Moore for NL and Gould and are considered worst case costs assuming little of the material is recyclable. In particular, costs for disposal of non-recyclable battery components such as ebonite in a RCRA landfill are estimated at over \$2,500,000 per year for five years. These costs also do not allow for any credit from the sale of recyclable components. Design costs for this project are estimated at only \$226,000. EPA views these detailed cost estimates as providing a strong justification for increasing the amount of effort devoted to designing a process that minimizes the amount of material that requires disposal in a RCRA landfill.

Based on the analysis above, all of the above alternatives are considered to be cost effective ones. Each appears to provide an increase in effectiveness and reduction in toxicity, mobility or volume (both criteria evaluated together) that is commensurate with the increased cost. The basis for the ratings in this table is included in the detailed analysis that follows for these three alternatives.

## Alternative 2C Evaluation

Alternative 2C comprises removal of the surface piles of battery casing fragments, followed by off-site component separation and recycle of some components, off-site disposal of others; lime treatment of the exposed surface soils and battery casing material, followed by low-permeability capping and revegetation; lime treatment of the East Doane Lake surface water; site grading; and a long-term monitoring program.

Short-Term Effectiveness. Under this alternative, most of the fill material would be left in place. During remediation, remedial action worker safety issues similar to those for minor earthmoving projects will arise. Hazards associated with site contaminants will be controlled by appropriate respiratory protection, proper safety attire and the application of dust suppression techniques. Therefore, the short-term risks for workers on-site would be negligible.

During remediation, lead concentrations in air emissions at the fenceline of the property will be monitored to detect any exceedences of the NAAQS for lead. Proper dust suppression techniques should minimize the likelihood of this event.

The surface piles carry the greatest potential for environmental risk because of their availability. Battery casing components contained in the surface piles will be transported to an off-site recycler for separation of components. After separation, some components will be recycled, while others may have to be disposed of in a landfill. Risks associated with transport of hazardous wastes from the site to the recycler, and hazardous waste transport from the recycler to a RCRA landfill, will be mitigated by transporting the wastes in accordance with 40 CFR 263 and State of Oregon requirements for hazardous waste transportation.

Alternative 2C could be executed in approximately one year, including planning, review, contracting and implementation.

The disadvantages of this alternative in terms of short term effectiveness are that significant quantities of hazardous materials remain at the site and there is potential exposure to these substances if the institutional controls proposed in this alternative are not effective. Secondly, the lime treatment proposed in this alternative has not been fully evaluated during the FS and therefore its effectiveness at this site is not well known.

Long-Term Effectiveness. Removal of the surface piles is expected to substantially reduce the potential for entrainment of dust from the site by wind, and to reduce the potential for human contact with site contaminants. Pumping and lime treatment of the site surface water may reduce the concentrations of dissolved contaminants by raising the pH of the water. Site grading will reduce the amount of runoff in East Doane Lake, and eliminate the transport of surface water off site. The application of lime to the surface areas where soil is exposed or where casings are exposed or buried may reduce the concentration of dissolved contaminants in surface runoff by raising the local pH. However, the effectiveness of this treatment technique at the Gould site has not been fully evaluated.

Subsequent capping will partially isolate the remaining contaminants, thereby reducing their availability for off-site transport by surface water, air and direct contaminant ingestion with soils. However, the location of the site in a 100 year floodplain, the problems with implementing institutional controls, particularly on the Rhone Poulenc and ESCO properties, and the fact that only 2% by volume of the contaminated casings will be removed make the long term effectiveness of this alternative questionable.

Reduction in Toxicity, Mobility, or Volume. Alternative 2C reduces the volume and toxicity of the site contaminants contained in surface piles, which are about 2% of the total battery casings. The mobility of contaminants in soil and subsurface casings may be reduced by increasing the pH of the soil system through lime treatment. Lime treatment may not be effective in preventing mobilization from groundwater moving underneath the site. Periodic reapplication of lime may be required to ensure the effectiveness of the treatment. Subsurface contaminants are not reduced in volume or toxicity.

Implementability. Equipment for separating the battery casing fill at the site is available. However, the separation equipment tested during the FS was designed to work on whole batteries, not on the mix of materials found at the Gould site. In particular, plastic and ebonite streams analyzed after processing through available separation equipment contained sufficient residual lead to fail the EP Tox test. Further, lead oxide is combined with much dirt in the separation process, which will serve to reduce the recyclability of this fraction. Alternative 2C would be accomplished using modified conventional machinery at an off-site facility.

Alternative 2C involves the removal and treatment of the surface piles of battery casings, surface soil treatment with lime, and surface water treatment by pH adjustment and filtration. Recovered battery casing components will be sent to other facilities for recycling or disposal. Those facilities receiving battery casing components will be required to meet RCRA Treatment, Storage or Disposal facility requirements for processing of hazardous wastes, as required by the EPA Off-Site Policy. Applicable DOT, EPA and State of Oregon regulations for the transport of hazardous materials will also have to be followed.

Any facility interested in accepting the lead compounds for the purposes of recovering the lead would have to be permitted as a TSD facility under RCRA. Recovered battery casing materials which cannot be recycled and which fail EP Tox will be disposed of in a RCRA landfill. Nonrecyclable materials which pass EP Tox may be disposed of in a sanitary landfill.

Cost. The costs associated with this alternative are divided into two categories. The first is capital cost which includes direct costs such as transportation, separation and disposal costs associated with the surface casings; surface water treatment costs; lime addition to soil; site grading; and installation costs associated with monitoring. Also included



in capital cost are indirect costs such as permitting, engineering and design, start-up, and contingency. The second category of cost is operating and maintenance costs including site monitoring and reporting. Operating costs are discounted to present worth for comparison of alternatives.

	<u>Capital Cost</u>	<u>O&amp;M @ 12% Present Worth</u>	<u>Total Cost</u>
Alternative 2C	\$3,133,760	\$1,789,722	\$4,923,481

Compliance with ARARs. Contaminant-specific, location specific and action specific ARARs that apply to the Gould site are contained in Appendix A. All contaminant-specific, location-specific and action-specific ARARs will be met by Alternative 2C, except for the EP Toxicity requirement for lead in soils and battery casing materials. This alternative also allows a continual source of lead to impact the groundwater under the site, which already exceeds the MCL of 0.05 mg/l and is considered a Class II aquifer.

Overall Protection of Human Health and the Environment. Surficial contamination on site is reduced under Alternative 2C by removal of the surface battery casings piles and by paving/capping areas of highest residual soil contamination, with lime applied before paving/capping to further reduce the potential mobility of residual lead in subsurface soils. These measures will provide controls for general inhalation exposures and direct contact ingestion exposures in these areas of the site, barring physical disturbance of the pavement/cap. East Doane Lake surface waters will also be treated under Alternative 2C.

Assuming that the cap is not disturbed, on-site residential exposures by inhalation and ingestion result in hazard indices less than 1.00 for all age groups. On-site worker and off-site residential populations have even lower hazard indices for all exposure pathways evaluated. On-site and off-site air lead concentrations are in compliance with the NAAQS ARAR value. However, these values are based on the effectiveness of the cap and the institutional controls that would be required on the Gould, Rhone-Poulenc, and the ESCO properties. There is considerable uncertainty as to whether Rhone-Poulenc or ESCO would allow these types of institutional measures on their property. Should the cap become disturbed, substantially higher exposures for ingestion might result.

Short-term, off-site worker inhalation exposures from fugitive dusts generated during Alternative 2C remedial activities are determined to be non-significant, with a hazard index of 0.19. Maximum short-term (quarterly) air lead concentrations off site are projected to be in compliance with the NAAQS ARAR value.

Community Acceptance. Several letters were included in the record of public comment which clearly indicate that this alternative is not acceptable to portions of the community. For example, the Northwest District Association, which covers an area representing 12,000 residents, stated that it considers this alternative to be "totally unacceptable". Other groups that have expressed opposition to Alternative 2C include: Willamette Heights Neighbors Concerned About Noise and Chemical Pollution, Northwest Environmental Advocates, and OSPIRG. These responses are included in Appendix B.

State Acceptance. The State of Oregon Department of Environmental Quality (DEQ) has carefully reviewed this alternative and finds it unacceptable.

## Alternative 10C Evaluation

Alternative 10C comprises excavation of all of the battery casing fragments and matte from the Gould property and adjacent properties, followed by on-site separation of the battery casing fragments. Separation is followed by recycling of those components (or portions of components) that can be recycled; off-site disposal for non-recyclable components that fail the EP Toxicity test, and on-site disposal of non-hazardous components. It is EPA's intent under this alternative to minimize the amount of material that would require disposal in a RCRA landfill. Treatment studies performed during design will be used to define what portions of the battery casings are recyclable.

Additional processes under Alternative 10C include excavation, fixation/stabilization and on-site disposal of contaminated soil, sediment and matte; soil capping of treated areas and revegetation; isolation of East Doane Lake by site regrading; and a monitoring program to determine changes in groundwater contamination over time. Under Alternative 10C, additional study will be performed on surface and groundwater in this area. The proposed study will help determine whether action needs to be taken to deal with the contamination underneath the site, and how that action should be coordinated with other cleanup efforts by nearby industries that are currently going on. The study will also address organic contamination as well as lead contamination. The study would begin later this year.

Short-Term Effectiveness. Beneficial effects of removing and successfully separating battery casings and fixing/stabilizing soils, sediments and matte will be immediate on completion. The groundwater and surface water monitoring program for Alternative 10C will be conducted as long as site contaminants remain unremediated.

During remediation, worker safety issues similar to those for moderate earthmoving projects will arise. For on-site workers, personnel protective equipment, including respiratory protection, will mitigate the safety concerns. However several activities will be conducted simultaneously in a relatively small area, leading to some concern over worker safety due to the intensive nature of site activity. As part of the remedial action, a comprehensive health and safety plan will be developed before field work begins.

During remediation, lead concentrations in air emissions at the fenceline of the property will be monitored to detect any exceedences of the NAAQS for lead. Proper dust suppression techniques should minimize the likelihood of this events. Most of the material to be remediated is currently saturated in groundwater, which will also help prevent fugitive emissions.

The completion of remedial activities under Alternative 10C may take up to 6 years after remedial design is complete. Site conditions that may delay execution of the alternative include logistical difficulties associated with dredging of the lake sediments. Requirements related to stabilization of the lake shoreline during deployment of dredging equipment may also serve to extend the time required for dredging. The estimate is based on a variety of factors that include the size of the facility and other items that will be evaluated during the design phase. It is the agency's intent to minimize the time that is required for remediation under this alternative.

Long-Term Effectiveness. Removal and successful separation of the battery casing fragments would substantially reduce sources of pollution at the site. Without the battery casings, levels of pollution in all media will decrease. Removal and disposal of contaminated sediments without treatment of the site surface water will raise the concentration of dissolved and suspended contaminants for a period of time.

Under this alternative, health and environmental hazards posed by the site are intensively addressed by treatment. Potential hazards posed by the site fill are addressed by treatment of the battery casing fragments. The treatment undertaken by this alternative addresses essentially all of the contaminated material and related risks. Risks remaining after remediation is completed are posed mainly by unremediated surface soils, ground water and surface water in the study area. The groundwater and surface water risks will be addressed in the additional study that is proposed under this alternative. Should the cap become disturbed, additional inhalation and ingestion risks might result. However, because of the intensive treatment employed in this alternative, these risks are considered to be less than those presented in either Alternative 2C or 2I.

The technology to be used in this alternative has been demonstrated in other situations and appears to be feasible based on the studies that have been done at this site, since the tests clearly showed that the materials can be separated. Design modifications of the separation process will be accomplished during the engineering studies that will occur as part of the remedial design phase.

Reduction in Toxicity, Mobility, or Volume. In the Nature and Extent of Problem section, the estimated quantities of metallic lead, plastic, lead oxide, ebonite, and other material are calculated. An estimate of the quantity of metallic lead is shown as 0.6 percent of all primary source materials, plastic is estimated at 3.0 percent of primary source materials, lead oxide/dirt/mud at 10.2 percent, and ebonite at 74.3 percent. Contacts made during the conduct of the FS indicate that the metallic lead would likely be completely recyclable, the plastic would be recyclable at some locations, depending on lead content, and lead oxide would likely be accepted by some smelters. The largest component of source material, ebonite, may or may not be recyclable depending on the extent to which it can be treated. Using these assumptions, it is estimated that approximately 25% of the lead in the casings can be recycled.

The potential for long-term mobility of site contaminants is decreased with Alternative 10C, by both removal of lead in the casings through recycling and by treatment of contaminated soils and sediment to reduce the mobility of lead.

Implementability. During the conduct of the FS, several efforts at component separation and cleaning of the battery casing material were attempted by the PRPs. A review of the efforts of others who attempted separation and recycle was also conducted. These attempts can be generally characterized as demonstrating that separation of battery casings is feasible at low feed rates.

Plastic and ebonite streams after processing may contain enough interstitial lead to fail the EP Tox test. All such materials that can not be recycled would need to be landfilled in a RCRA facility.

Soil stabilization is a proven technology and was shown to be effective in a bench-scale test during the FS. Pilot testing of the technology under actual site conditions will be required during remedial design to determine the correct ratios of materials and to determine whether the technique can be effective under actual site conditions.

Sediment dredging may contribute to the difficulty of subsequent treatment of East Doane Lake surface water, though some sedimentation of the suspended materials should occur prior to any future surface water remediation. Excavation of the fill on the Gould and off-site properties must also include a consideration of the power lines along the northwest edge of the Gould property, which may need to be relocated because of remediation.

Alternative 10C involves the excavation and separation of all battery casings, followed by recycle or RCRA disposal of specific battery casing constituents. Those recycle facilities receiving the lead oxide and soil component will have to meet RCRA TSD requirements for processing of hazardous wastes, as required by the EPA Off-Site Policy. Applicable DOT, EPA and State of Oregon regulations for the transport of hazardous materials will also have to be followed. No permit will be required for any of the wholly on-site portions of the alternative. During remediation, separation and treatment facilities will be erected, operated and demolished, and excavation equipment will be operated. These activities may require local construction permits.

Recovered battery casing materials which can not be recycled will be disposed of in a landfill. Components which fail the EP Toxicity test will have to be placed in a landfill that meets the RCRA requirements of 40 CFR Part 264. It is EPA's intent to minimize this portion of the separation plant output stream.

Cost. The costs associated with this alternative are divided into two categories. The first is capital cost, which includes direct costs such as erection of process equipment, excavation, separation and disposal costs associated with the surface and subsurface casings; sediment dredging costs, soil stabilization costs; site grading; and installation costs associated with monitoring. Also included in capital cost are indirect costs such as permitting, engineering and design, start-up, and contingency. The second category of cost is operating and maintenance costs that occur throughout the multi-year remedial effort, such as excavation, separation, and disposal costs beyond year one. Operating and maintenance costs are discounted to present worth for comparison of alternatives.

<u>Capital Cost</u>	<u>O&amp;M @ 12% Present Worth</u>	<u>Total Cost</u>
\$3,491,603	\$17,073,581	\$20,565,184

The costs for this alternative are extremely difficult to estimate. The above costs have been prepared by the Dames & Moore for NL and Gould and are considered worst case costs assuming little of the material is recyclable. In particular, costs for disposal of non-recyclable battery components such as ebonite in a RCRA landfill are estimated at over \$2,500,000 per year for five years. These costs also do not allow for any credit from the sale of recyclable components. Design costs for this project are estimated at only \$226,000. EPA views these detailed cost estimates as providing a strong justification for increasing the amount of effort devoted to designing a process that minimizes the amount of material that requires disposal in a RCRA landfill.

Compliance with ARARs. Contaminant-specific, location specific and action specific ARARs that apply to the Gould site are contained in Appendix A. All contaminant specific, location-specific and action specific ARARs will be met by Alternative 10C. During remediation, lead concentrations in air emissions at the fenceline of the property could exceed the NAAQS for lead. If continued exceedences occur, remedial operations will be shut down and appropriate modifications to the operations will be made. Activities may also be adjusted based on meteorological conditions. All materials handling will be performed as a wet process where feasible. A site specific health and safety plan will be developed to ensure the safety of remedial action workers. Much of the material to be remediated is currently saturated in groundwater, which will also help prevent fugitive emissions.

Overall Protection of Human Health and the Environment. Surficial contamination on site is reduced under Alternative 10C by on-site treatment of all battery casings (piles and buried), with off- site disposal at a RCRA landfill of materials failing EP Toxicity tests and stabilization/on-site disposal of remaining residual materials (soil, sediment, matte), and pavement/capping of all disposal areas. These measures will provide long-term, effective controls for general inhalation exposures and direct contact ingestion exposures in these areas of the site. Stabilization of residual wastes will provide an additional component of protection and further prevent contaminant migration to groundwater.

Community Acceptance. In the public record there are several letters indicating support for this alternative. Groups that have expressed support for Alternative 10C include: Food Front Cooperative Grocery, Willamette Heights Neighbors Concerned About Noise and Chemical Pollution, Northwest Environmental Advocates, and OSPIRG. These responses are included in Appendix B.

State Acceptance. DEQ fully endorses this alternative and supports EPA's conclusion that Alternative 10C meets the statutory requirements for a remedy contained in CERCLA and Oregon Senate Bill 122.

## Alternative 21 Evaluation

Under Alternative 21, all of the fill material on the Gould and off-site properties above 3000 ppm will be excavated for treatment (soil, sediments) or on-site disposal (battery casings). Contaminated soil, sediment, and matte would be treated by fixation/stabilization, then backfilled into the site excavation. Excavated battery casing materials would be disposed of in an on-site RCRA landfill. The alternative also includes pH adjustment and filtration of the East Doane Lake remnant, site grading, low-permeability surface capping, and a long-term monitoring program.

Short-Term Effectiveness. Under this alternative, the recovered battery casing fill would be stored on an adjacent property while the landfill is constructed. During remediation, worker safety issues similar to those for moderate earthmoving projects will arise. For on-site workers, safety attire will mitigate some safety concerns, however several activities will be conducted simultaneously in a relatively small area, leading to some concern over worker safety due to the intensive nature of site activity. As part of the remedial action, a comprehensive health and safety plan will be developed before field work begins.

During remediation, lead concentrations in air emissions at the fenceline of the property will be monitored to detect any exceedences of the NAAQS for lead. Proper dust suppression techniques should minimize the likelihood of this events. Most of the material to be remediated is currently saturated in groundwater, which will also help prevent fugitive emissions.

Remediation under Alternative 21 might be completed in about four years, including planning, review, contracting and construction.

Long-Term Effectiveness. The intent of this alternative is to fully mitigate potential health and environmental effects of site contaminants by completely isolating the contaminants from the environment. Enclosure of the battery casing fill in a RCRA landfill will prevent the migration of contaminants in water and air, and will limit their availability for direct ingestion. Fixation/stabilization treatment of soil, sediment and matte will also prevent contaminant migration and will decrease the mobility of these materials. Site regrading and blocking of the overflow from the East Doane Lake remnant will reduce the accumulation of runoff in the lake remnant, and decrease the movement of contaminated surface water off site. With appropriate institutional controls, the health and environmental hazards posed by the site fill are mitigated.

The removal and on-site disposal of the battery casing fill will require long term maintenance and monitoring. Frequent inspection of the cap will be required to ascertain that an impermeable barrier is maintained between the contaminants and the environment. Site monitoring equipment will require continued maintenance, as well. As a result, the effectiveness of leaving all of the contaminated battery casings untreated on-site is questionable, given concerns about the long term maintenance requirements of caps, the location of the site in a floodplain, and the effectiveness of institutional controls at this site.

Soil stabilization is a proven technology and was shown to be effective in a bench-scale test during the FS. Pilot testing of the technology under actual site conditions will be required during remedial design to determine the correct ratios of materials and to determine whether the technique can be effective under actual site conditions.

Reduction in Toxicity, Mobility, or Volume. On-site disposal of untreated battery casings cannot be considered a treatment that permanently or significantly reduces the toxicity or volume of hazardous substances. The mobility of contaminated soils is reduced by treatment.

Implementability. Soil stabilization is a proven technology and was shown to be effective in a bench-scale test during the FS. Pilot testing of the technology under actual site conditions will be required during remedial design to determine the correct ratios of materials and to determine whether the technique can be effective under actual site conditions.

Sediment dredging will contribute to the difficulty of subsequent treatment of East Doane Lake surface water. Excavation of the fill on the Gould and off-site properties must also include a consideration of the power lines along the northwest edge of the Gould property, which may need to be relocated because of remediation. Power supply to industrial facilities may be interrupted as a result.

Alternative 21 would be accomplished using conventional machinery and techniques. Surface capping is a proven technology, and is considered reliable. However, failure of a surface cap could require additional remediation, consisting of replacement of the cap.

During construction, monitoring systems will be installed, site drainage systems will be emplaced, and buildings will be demolished. Construction permits will be required for any off-site portion (i.e., drainage) of these activities.

During construction of the landfill, excavated wastes would have to be placed on an adjacent property. Temporary storage of excavated material must comply with 40 CFR 265.253 and 265.254. Off-site storage might also require special arrangements with state and local agencies and authorities, and special agreements with neighboring property holders.

The materials and equipment needed to implement Alternative 21 include a dredge for the sediments, common excavation equipment, a plastic geomembrane for the landfill, water treatment equipment, monitoring equipment, and a source of lime and other reagents for fixation/stabilization. All of these materials are readily available.



Cost. The costs associated with this alternative are divided into two categories. The first is capital cost, which includes direct costs such as excavation and landfill construction costs; sediment dredging costs, surface water treatment costs; soil fixation/stabilization costs; site grading; and installation costs associated with monitoring. Also included in capital cost are indirect costs such as permitting, engineering and design, start-up, and contingency costs. The second category of cost is operating and maintenance costs that occur throughout the multi-year remedial effort, such as excavation, placement and monitoring costs beyond year one. Operating and maintenance costs are discounted to present worth for comparison of alternatives.

	<u>Capital Cost</u>	<u>O&amp;M @ 12% Present Worth</u>	<u>Total Cost</u>
Alternative 21	\$9,678,453	\$5,983,396	\$15,661,848

Compliance with ARARs. Contaminant-specific, location specific and action specific ARARs that apply to the Gould site are contained in Appendix A. Several action specific ARARs are particular to Alternative 21. These are indicated below:

- Landfill: must comply with 40 CFR 264 standards for a hazardous waste landfill.
- Capping: must comply with 40 CFR 264 Subpart G standards for a cover over hazardous waste at closure.
- Closure with waste in place: must comply with 40 CFR 264 Subpart G standards for closure performance and post-closure care and monitoring.
- Excavation: hazardous wastes excavated and replaced on-site must be replaced in a waste management unit that complies with RCRA requirements.

All contaminant-specific, and location-specific ARARs can be met by Alternative 21. During remediation, lead concentrations in air emissions at the fenceline of the property could exceed the NAAQS for lead. However, proper design of the materials handling process and proper dust suppression techniques should minimize the likelihood of these events. Much of the material to be remediated is currently saturated in groundwater, which will also help prevent fugitive emissions.

Action-specific ARARs for Alternative 21 can be met, with details to be worked out during remedial design.

Overall Protection of Human Health and the Environment. Surficial contamination on site is reduced under Alternative 21 by on-site treatment of all contaminated soils, with stabilization/on-site disposal in a constructed landfill of these materials and battery casing components. These measures will provide long-term, effective controls for general inhalation exposures and direct contact ingestion exposures in these areas of the site, barring physical disturbance of the RCRA landfill. Stabilization of residual wastes will provide an additional component of protection if the RCRA landfill is disturbed.

The long-term exposures and risks after completion of Alternative 21 remediation activities are determined to be acceptable. On-site residential exposures by inhalation and ingestion result in hazard indices less than 1.00 for all age groups. Should the landfill cap become disturbed, however, these exposures could increase.

Community Acceptance. During the public comment period, most of the comments were addressed to either Alternative 2C or 10C rather than Alternative 21. However, many of the comments expressed a desire for a "complete clean-up" of the site. To the extent that Alternative 21 fails to remove lead from the battery casings, community concerns about this alternative are assumed.

State Acceptance. DEQ's position regarding this Alternative is that the agency is opposed to any alternative that will increase the number of RCRA landfills in the State of Oregon. Since there is another cost effective alternative for this site, Alternative 21 is deemed unacceptable.

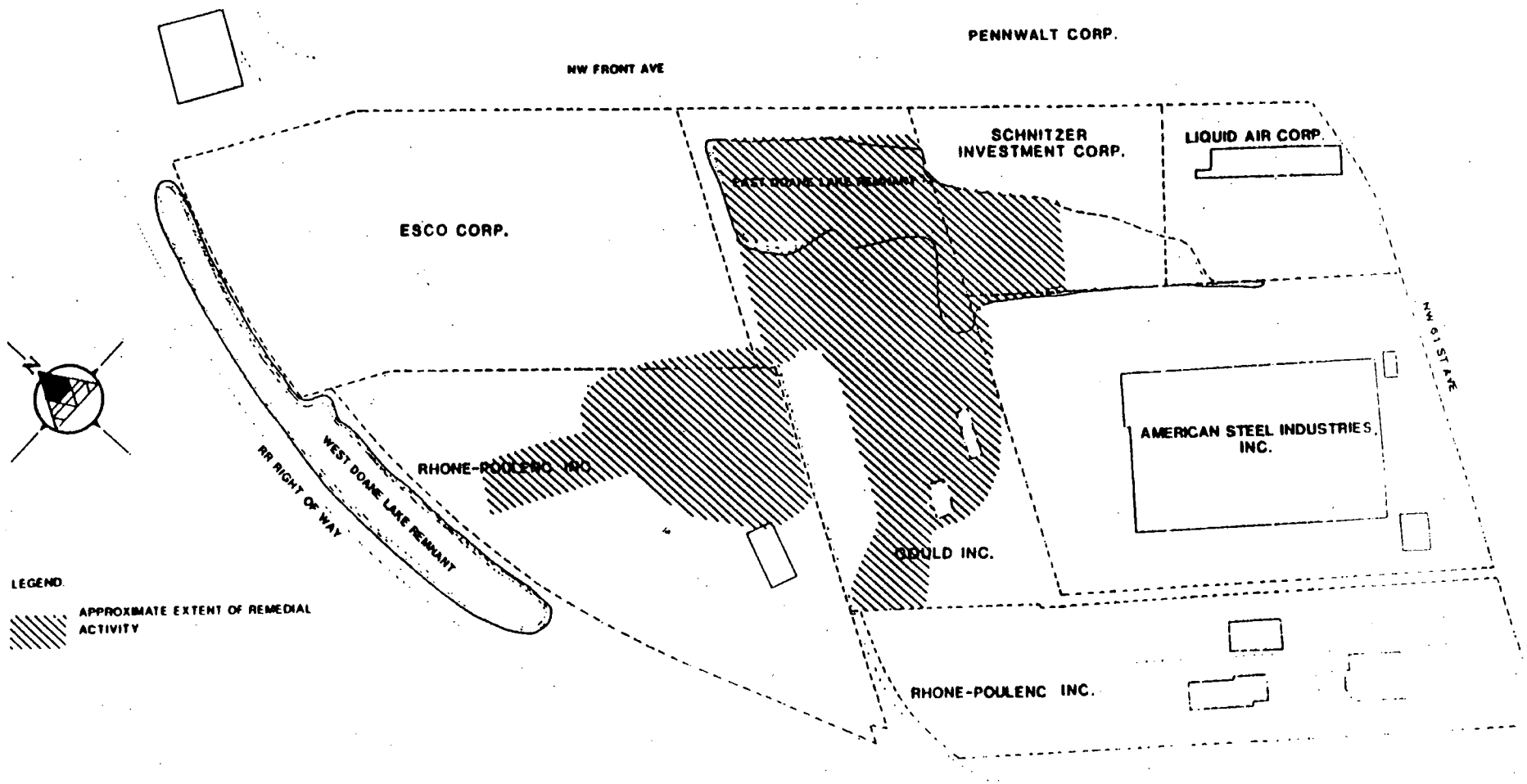
## VI SELECTED REMEDIAL ALTERNATIVE

### Description of Selected Remedy

The selected remedy for the soils unit at the Gould site is based on Alternative 10C. The selected remedy comprises:

- Excavation of all of the battery casing fragments and matte from the Gould property and adjacent properties where casings have been identified;
- A phased design program to determine the amount of material that can be recycled and to minimize the amount of material that must be RCRA landfilled.
- Separation of the battery casing fragments;
- Recycling of those components (or portions of components) that can be recycled, off-site disposal for non-recyclable components that fail the EP Toxicity test, and on-site disposal of non-hazardous, non-recyclable components;
- Excavation, fixation/stabilization and on-site disposal of the remaining contaminated soil, sediment, and matte;
- Soil capping and revegetation;
- Isolation of surface water runoff to East Doane Lake by site regrading; and
- A monitoring program to determine changes in groundwater contamination over time and to ensure that remediation does not adversely impact air quality.

Under Alternative 10C, additional study will be performed on surface and groundwater in this area. The proposed study will help determine whether action needs to be taken to deal with the contamination underneath the site, and how that action should be coordinated with other cleanup efforts by nearby industries that are currently going on. The study will also address organic contamination as well as lead contamination. The study should begin later this year and will be accomplished under a strict schedule.



LEGEND:

APPROXIMATE EXTENT OF REMEDIAL  
ACTIVITY

0 100 400  
SCALE 1" 200' FEET

Reference:  
From a topographic survey map dated May 18, 1986,  
by D.E. Marx & Associates, Gresham, Ore.,  
for Dames & Moore

Figure 9

Estimated Areas to be  
Remediated under Selected  
Remedy

The outfall of East Doane Lake will be blocked such that water that fails the Oregon Water Quality Standard for lead will not be discharged to the Willamette River. The processes and unit operations under the selected remedy are described below. The areal extent of remediation under the selected remedy is depicted in Figure 9.

Battery casings will be excavated and then delivered to a stockpile located adjacent to the battery casing treatment plant. The contaminated soils, sediments and matte will be removed and stockpiled adjacent to a soils treatment facility. The estimated in-situ casing and contaminated soil quantities are as shown in the following table.

	<u>Volume</u> <u>(cu yd)</u>	<u>Mass</u> <u>(tons)</u>
Surface Soils	3,370	4,300
Sub-surface Soils	13,650	17,500
Sediments	5,500	7,520
Matte	6,000	12,000
Battery Casings	80,800	86,820

The contaminated soils will be transferred to a stockpile formed adjacent to the soils treatment facility. Soils which will not be treated but were removed for ease of access and slope stability will be stockpiled and later used as backfill. This volume is estimated to be 17,800 cu. yd.

The treated soils will be back hauled to the excavation, then graded and compacted in lifts suitable for the soil type. The site will be graded to have swales and slopes to provide soil stability, drainage, and prevent run-on from adjacent areas. Top soil will be imported to provide a four-inch soil cap with a vegetative cover to prevent weathering and subsequent airborne migration.

In addition to the earthmoving required on the Gould site, the northeast section of the American Steel Industries parking lot, which drains to the lake, will require modification to reroute drainage from that facility.

To prevent excess airborne migration during surface and subsurface excavation of material, dust control by watering and other measures will be practiced as required. In addition to watering, these activities could include reduced vehicle speeds; reduced drop heights; and special enclosures and controls for conveyors. Additional design modifications may also be required to ensure that fugitive emissions are kept to a minimum. Site boundaries will be monitored to determine if air emissions of lead exceed the NAAQS. If continued exceedences occur, remedial operations will be shut down and appropriate modifications to the operations will be made. Activities may also be adjusted based on meteorological conditions. A site specific health and safety plan will be developed to ensure the safety of remedial action workers.

The excavation of subsurface battery casings and subsequent treatment will result in an extension of East Doane Lake in the Gould property, in the Rhone-Poulenc property, and on the ESCO property. To prevent erosion, the excavation will be graveled at the shoreline and coarse gravel will be spread and graded above and below the waterline.

A treatment facility will be constructed at the site to treat contaminated surface soils, subsurface soils, sediment and matte. A typical process for treating soils consists of a comminution system to reduce the materials to a relatively uniform size, and then pugmilling with an additive to bind the metals in the soils matrix.

In the pugmilling section, the process commences at the feed hopper. Stockpiling, retrieval, material handling, and circulating loads in the crushing circuit provide a uniform blend of feed material to the pugmill. In the pugmill the feed is joined with binder additive and a predetermined amount of water, then fed to the pugmill as a water based slurry. In the pugmill the additive is driven into the soils. The additive comprise of a cement-like fixative (cement, pozzolan, lime, clays); a reducing agent, and various proprietary chemicals. The actual additive composition and its ratio will be determined by pilot testing during the design phase. The pugmill discharges the stabilized soil to a belt conveyer which transports it to a stockpile from where it will be retrieved by loader for backfilling.

A treatment facility will also be constructed at the site to treat the contaminated battery casings and produce potentially recyclable products or a reduction in material to be subsequently disposed. The process includes a comminution system to reduce the materials to a size at which they can be separated. This is followed by a series of hydroclassifiers which separate the various products in water by the differential specific gravities. Separation is performed as a function of material specific gravity and detention time in each classifier. The quantities, specific gravities, and loose bulk densities of each of the casing components are estimated to be the following:

<u>Component</u>	<u>Specific Gravity</u>	<u>Bulk Density (lbs/cu.ft.)</u>	<u>Volume (cu. yd.)</u>	<u>Mass (tons)</u>
Ebonite	1.40	61.21	77,642	64,148
Plastics	0.94	41.90	5,162	2,920
Met. Lead	11.34	267.73	136	493
Oxide/Mud	5.65	214.54	3,059	8,860
Rock/Slag	2.20	95.01	2,313	2,966
Other	1.50	67.00	1,405	1,268
Moisture	1.00	62.30	0	6,175
Average/Total	2.15	71.68	89,717	86,827

The actual volume of casings to be treated will be determined after additional design work to further define the locations of battery casings underneath the site and determine the characteristics of the subsurface casings/soil matrix that can be recycled.

It is also assumed that both the soils treatment and battery recycling plants will operate concurrently.

The separated materials from the battery separation facility will be ebonite, plastic, metallic lead, and a combined stream of lead oxide/mud. Based on the results of pilot studies it is assumed that all of the metallic lead, half of the plastic, and 25 percent of the lead oxide/mud will be potentially recyclable. Any of the ebonite, plastic, lead oxide/mud streams that fail EP Toxicity will be sent to an off-site RCRA landfill. Materials that pass EP Toxicity but which can not be recycled may be left on site. These amounts will depend on the the results of the separation step.

Rock/debris and other similar materials separated from the recycling plant feed stream will be sent to the fixation plant and treated with the soil for backfilling.

The end product of soil stabilization treatment will be tested for the appropriate physical and chemical characteristics. The design of the testing procedures will be developed after the pilot testing and selection of the particular stabilization technique. The testing program would determine treated and untreated soil properties such as porosity, permeability, wet and dry densities, particle size distribution, bulk properties, and durability. Chemical leach testing of stabilized soil, including EP Toxicity tests, will be done to predict its chemical stability.

#### Design Studies

A major feature of this selected remedy is the design work that will be required before the remedy can be implemented. As discussed earlier, EPA intends to devote extensive design effort to developing a process that will minimize the amount of material that will require disposal in a RCRA landfill. The design work will consist of a phased series of studies to:

- ° Define recyclability criteria for the subsurface casings that will be used to determine the volumes of subsurface casings that can be recycled.
- ° Determine the process requirements to separate the casing components in a manner that minimizes fugitive emissions. Depending on the results of initial evaluations under this step, large quantities of surface casing material may be transported to an off-site facility for recycling and equipment modification studies.
- ° Determine the modifications required to adapt existing separation technology to conditions at the Gould site.
- ° Determine the process requirements for treating contaminated soils, sediment and matte.

### Additional Study

Under the selected remedy, additional study will be performed on surface and groundwater in this area. At present, EPA believes that the information currently available on the surface and groundwater at the site is insufficient to make a decision on remediation of those areas. The proposed study will help determine whether action needs to be taken to deal with the contamination underneath the site, and how that action should be coordinated with other cleanup efforts by nearby industries that are currently going on. The study will also address organic contamination as well as lead contamination. The study would begin later this year. EPA has notified several companies in the Doane Lake area that they may be responsible for this contamination and will be working with them to do the study.

### Monitoring

The monitoring program will consist of airborne monitoring during the construction and operation period as required to ensure that the selected remedy is protective of public health and the safety of remedial action workers; and long term groundwater/surface-water monitoring. The groundwater and surface water monitoring results will be used as needed to determine whether any additional remedial measures are required for these areas.

### Institutional Controls

The institutional controls that would be available to prevent contact with contaminated ground or surface water during and after remediation include site access restrictions, restrictive covenants, deed restrictions, property transfer restrictions, conveyance of subsurface rights to a third party, and private third-party agreements. A choice of the correct combination of controls to apply to the remedy during remediation will be made during remedial design. Additional post remediation controls will be determined after remediation.

### Performance Standards

Soil Stabilization and Capping - Surface soils with a total lead concentration above 1,000 ppm; and subsurface soils, sediment, and matte which fail EP Toxicity standards will be treated as described above. Laboratory experiments will be performed to ensure that the stabilization process effectively immobilizes the contaminants. Stabilization will be deemed effective if the following tests are met:

- 1) The leachate generated during the EP Toxicity test does not contain contaminants in excess of the levels required to pass the test.
- 2) The stabilized material passes standard engineering strength tests to be determined in the design phase.



The cap shall be designed and maintained to provide protection against surface exposure of humans or animal or plant life to the stabilized soil contaminants, and protect this material from weathering. A four inch soil cover will be placed over the stabilized material and revegetated.

The stabilized material cap must also meet the following design requirements of 40 CFR 264.310.a: 1) function with minimum maintenance; 2) promote drainage; and 3) accommodate settling and subsidence so that the cap's integrity is maintained.

**Battery Casings Separation.** All battery casings material that fails EP Toxicity standards and passes recyclability criteria developed during the design studies will be processed in the separation facility.

Output feed streams from the separation facility must meet the following criteria:

- 1) Lead and lead oxide streams must meet the requirements of RCRA regarding recyclability.
- 2) Ebonite and plastic streams must pass EP Toxicity requirements.

Output streams which do not pass these criteria will require transportation to a RCRA landfill that meets the requirements of 40 CFR 264, and EPA's off-site policy.

#### Statutory Determinations

As discussed in the detailed evaluation of alternatives, the selected remedy is protective of human health and the environment. Surficial contamination on site is reduced under Alternative LOC by on-site treatment of all recyclable battery casings (with volumes to be determined during design); with off-site disposal at a RCRA landfill of materials failing EP Toxicity tests and stabilization/on-site disposal of remaining residual materials; and pavement/capping of all disposal areas. These measures will provide long-term, effective controls for general inhalation exposures and direct contact ingestion exposures in these areas of the site. Stabilization of residual wastes will provide an additional component of protection and help prevent further long term contamination of the groundwater underneath the site from these wastes.

The selected remedy also attains ARARs for the soils unit considered in this ROD. These ARARs are specified in Appendix A. All contaminated casings and soils will be treated to ensure compliance with the EP Toxicity standard of 5 mg/l.

In comparison with the other alternatives which pass the Protectiveness/ARAR screening, the selected remedy provides a level of effectiveness and reduction in toxicity, mobility or volume that is commensurate with its cost; it is therefore cost effective. Since the remedy is considered to be the optimal choice when all nine evaluation criteria are used, it is also considered to represent treatment to the maximum extent practicable for the soils unit at this site. The selected remedy, in treating all the contaminated casings and soils, also satisfies the preference in CERCLA for treatment as a principle element.

**APPENDIX A**  
**APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS**

APPENDIX A  
APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS  
LAWS AND REGULATIONS TO BE CONSIDERED

A. FEDERAL LAWS AND REGULATIONS THAT ARE ARARS FOR THE GOULD SITE

- Resource Conservation and Recovery Act (RCRA) (42 USC 6901), Subtitle C:

EP Toxicity Standards for lead, cadmium, chromium, zinc.

Landfills: must comply with 40 CFR 264 standards for a hazardous waste landfill.

Capping: must comply with 40 CFR 264 Subpart G standards for a cover over hazardous waste at closure.

Closure with waste in place; must comply with 40 CFR 264 Subpart G standards for closure performance and post-closure care and monitoring.

- Clean Air Act (CAA) (72 USC 7401):

National Ambient Air Quality Standards for lead.  
Ambient Air Quality Standard 1.5 ug/m3 lead

arithmetic average concentration of all samples  
collected during any one calendar quarter period.

- OSHA 29CFR 1910:

Regulations governing worker safety at hazardous waste sites.

Other Action Specific ARARS

The following ARARS will be used for any wastewater discharges from remedial actions at the Gould site.

- Safe Drinking Water Act (SDWA) (42 USC 300):  
Drinking Water Standards (40 CFR 141), including maximum  
contaminant levels (MCLs).
- Clean Water Act (CWA) (33 USC 1251):  
National Pollutant Discharge Elimination System (40 CFR 122)  
Water Quality Criteria (EPA440/5-86-001).

## B. OREGON STATE LAWS AND REGULATIONS THAT ARE ARARS FOR THE GOULD SITE

### Chemical Specific ARARs

<u>Regulation</u>	<u>Standard</u>
OAR 437.100.010	No employee exposure to inorganic arsenic at concentrations greater than 10 ug/m <sup>3</sup> of air averaged over any 8 hour period.
OAR 340-31.055	Ambient Air Quality Standard of 1.5 ug/m <sup>3</sup> lead. Arithmetic average concentration of all samples collected during any one calendar quarter period.
OAR 340.20.225	Air/ Significant Emission Rate of 0.6 ton/year lead
OAR 437.111.010	No employee exposure at lead concentrations greater than 50 ug./m <sup>3</sup> of air averaged over an 8-hour period.
OAR 340-45	Regulations Pertaining to NPDES and WPCF Permits

### Suspended Particulate Matter

OAR 340-31.015	
Annual Geometric Mean	60 ug/m <sup>3</sup>
24 hour concentration for more than 15 % of samples in one calendar month.	100 ug/m <sup>3</sup>
24 hour concentration not more than once per year.	150 ug/m <sup>3</sup>

### Fine Particulates/ PM10

Annual Arithmetic Average	50 ug/m <sup>3</sup>
24 hour average concentration, not exceeded more than average of one day per year.	150 ug/m <sup>3</sup>

## Action Specific ARARs

### Hazardous Waste

OAR 340.100-002

(Federal Regulations Incorporated by Reference)

#### Capping

surface impoundments - 40 CFR 264.228

waste piles - 40 CFR 264.258(b)

landfills - 40 CFR 264.310(a)

#### Closure with waste in place

stabilization - 40 CFR 264.228 (a)(2) and 40 CFR 264.258(b)

install final cover - 40 CFR 264.310

30 year post closure care - 40 CFR 264.310

Operation and Maintenance - 40 CFR 264.310

Surface Water Control - 40 CFR 264.251(c),(d)  
264.273(c),(d)  
264.221(c)

Waste Pile - 40 CFR 264.251

#### Regulation

#### Standard

OAR 340-101

Identification and Listing of Hazardous Waste - will determine which wastes at the site are considered hazardous

OAR 340-102

Standards Applicable to Generators of Hazardous Waste - will determine which wastes at the site are considered hazardous.

OAR 340-104

Standards for Owners and Operators of Hazardous Waste Treatment, Storage and Disposal Facilities - establishes closure and post closure care of surface impoundments and waste piles.

OAR 340-108

Oil and Hazardous Material Spills and Releases - regulates emergency spill reporting and cleanup standards.

ORS 466-005  
to ORS 466-995

Hazardous Waste and Hazardous Materials - Covers hazardous waste disposal and treatment, monitoring requirements.

OAR 340-130

Notice of Environmental Hazards - pertains to institutional controls at the site

Solid Waste

Regulation

Standard

OAR 340-61

Solid Waste Management - covers storage, disposal and treatment of solid waste.

ORS 459-005 to 459-355

Solid Waste Control - same as above.

Air Quality

Depending on the type of action designed, the regulations described below may contain specific requirements in addition to the chemical specific air pollution regulations cited earlier.

Regulation

Standard

OAR 340-20

Air Pollution Control - details contained in regulations cited below.

OAR 340-20-001

Highest and Best Practicable Treatment and Control Required

OAR 340-20-040

Methods

OAR 340-20-240

Requirements for Sources in Nonattainment Areas

OAR 340-20-225

Significant Emission Rate

OAR 340-20-245

Requirements for Sources in Attainment or Unclassified Areas (Prevention of Significant Deterioration)

OAR 340-21

General Emission Standards for Particulate Matter

OAR 340-31

Ambient Air Quality Standards

## Oregon Occupational Safety and Health Code

<u>Regulation</u>	<u>Standard</u>
OAR 437-40	General Provisions
OAR 437-50	Personal Protective Equipment
OAR 437-83	Construction
OAR 437-100	Inorganic Arsenic
OAR 437-111	Lead
OAR 437.114	Air Contaminants
OAR 437.129	Protective Equipment. Apparel. and Respirators
OAR 437.136	General Occupational Health Regulations

## Transportation of Hazardous Materials

OAR 860.66.055 to 860.66.072

## Oregon Land Use Goals:

OAR 660.15.000(6)

Goal 6. Air, Water and Land Resources Quality - Establishes that discharges shall not exceed the carrying capacity of air water or land and shall not violate applicable Federal or State environmental quality statutes and regulations.

OAR 660.15.000(7)

Goal 7. Areas Subject to Natural Disasters and Hazards - Establishes that floodplain areas should be evaluated as to the degree of hazard present.

## C. FEDERAL LAWS AND REGULATIONS TO BE CONSIDERED

- ° Safe Drinking Water Act (SDWA) (42 USC 300):  
Drinking Water Standards (40 CFR 141), including maximum  
contaminant levels (MCLs).
- ° Clean Water Act (CWA) (33 USC 1251):  
National Pollutant Discharge Elimination System (40 CFR 122)  
Water Quality Criteria (EPA440/5-86-001).

## D. STATE OF OREGON LAWS AND REGULATIONS TO BE CONSIDERED

### Chemical Specific Regulations

OAR 333.61.030	0.05 mg/l Drinking Water Standard for chromium 0.05 mg/l Drinking Water Standard for lead 5 mg/l Drinking Water Standard for zinc 0.01 mg/l Drinking Water Standard for cadmium 0.05 mg/l Drinking Water Standard for arsenic
OAR 340-41-445	0.05 mg/l Lead Standard for Protection of Human Health from Water and Fish Ingestion 0.01 mg/l Chromium Standard for Protection of Human Health from Water and Fish Ingestion 0.05 mg/l Arsenic Standard for protection of Human Health from Water and Fish ingestion

### Water Quality Regulations

OAR 340-41-001 to 340-41-029	State Wide Water Quality Management Plan - regulates groundwater quality.
OAR 340-41-442 to 470	Willamette Basin - establishes beneficial uses to be protected and water quality criteria not to be exceeded.



**APPENDIX B**  
**RESPONSIVENESS SUMMARY**

# RESPONSIVENESS SUMMARY

NL/GOULD, INC.

PORTLAND, OREGON

This community relations responsiveness summary is divided into the following sections:

## PAGE

Section A: Overview.

2

This section discusses the EPA selected alternative for corrective action and public reaction to this alternative.

Section B: Background on Community Involvement and Concerns.

3

This provides a brief history of community interest and concerns raised during remedial planning and investigation activities at the NL/Gould, Inc., site

Section C: Summary of Comments Received During the Public Comment Period and EPA's Responses to the Comments.

Both written and oral comments are categorized. EPA's responses to these comments are also provided.

Section D: Remaining Concerns.

This section describes remaining community concerns that EPA should take into consideration in conducting the remedial design and remedial action at the NL/Gould, Inc., site.

OVERVIEW

At the time of the public comment period (2/18-3/18/88), EPA identified a preferred cleanup alternative for the NL/Gould site. EPA's preferred alternative involved removing the battery casings on and beneath the site and treating them for proper disposal of lead, plastic, and other materials; treating the lead contaminated soil and sediments with a chemical additive to bind the lead to the soil and keep the contamination on site; and additional studies of groundwater pollution in the Doane Lake area to decide if additional cleanup is necessary. The preferred alternative is described further in the detailed evaluation.

This Responsiveness Summary describes concerns which the community has expressed regarding the problems at the site and the preferred cleanup alternative. EPA's response to these comments are also provided.

After reviewing all the comments received during the public comment period, EPA has determined that residents of the local communities, local environmental groups, and the Oregon Department of Environmental Quality strongly support EPA's proposed alternative. Indeed, some residents and groups would go farther.

The potentially responsible parties, NL Industries and Gould, Inc., do not support EPA's preferred alternative. Instead, they recommend Alternative 2C, which is discussed in the detailed evaluation.

### BACKGROUND ON COMMUNITY INVOLVEMENT AND CONCERNS

From 1981 until 1985 when EPA assumed the enforcement lead for the site, Oregon Department of Environmental Quality (DEQ) conducted community relations activities as part of its regulatory efforts at the site.

In 1982, DEQ announced proposed listing of the NL/Gould site for the National Priorities List. There was little public response to the proposed listing. From December 1982 to September 1983, the site received moderate media publicity. General public interest in the site appeared to be low despite the intermittent media coverage.

In 1983, Oregon Congressional Representative Les AuCoin corresponded with DEQ about the site, and DEQ held a meeting with city, county, and state agency officials to present information about environmental concerns in the area and to solicit comments. Representative AuCoin specifically requested that DEQ assure him that site cleanup would completely remove potential contaminants.

EPA prepared a Community Relations Plan for this site in 1985, based on research and interviews with interested community members and officials. The issues of concern to the affected community and local officials included:

1. **Groundwater Pollution.** People were concerned about ground- water contamination in the area and how it might affect future growth of the area.

**EPA responded to this concern by including extensive groundwater testing in the RI.**

2. **Airborne Lead.** Several agency officials indicated that high levels of lead emissions were a primary concern and that high levels of airborne lead could adversely affect the health of nearby workers. Exposure to lead at the approximately 10 houses in the hills above the site was thought unlikely, but necessary to investigate.

**EPA has included air monitoring in the RI.**

3. **Effects on Workers' Health.** Individuals were concerned about exposure through incidental ingestion of ground water obtained for industrial use and exposure to airborne lead.

**EPA has included exposure scenarios for workers in the risk assessment for the site.**

4. **Cleanup Schedule.** Staff from Representative AuCoin's office and a representative from the Oregon State Public Interest Research Group expressed dissatisfaction that cleanup measures had not been implemented earlier.

**EPA has attempted to evaluate the site and make a remedial decision in an expeditious manner. By focusing on the soils unit, a decision will be made now.**

5. **Future Development of the Doane Lake Area.** The media and local officials expressed concern about how the current pollution would affect or restrict future uses of the land.

**Future use restrictions are expected to be minimized by removing or treating as much of the lead at the site as possible.**

6. Disposal of Dredged Materials from the River. A representative from the Port of Portland indicated the Port's concern about disposing of dredged materials from the Willamette River that might be found to contain contaminants from the site.

The RI included an evaluation of sediment around the outfall from East Doane Lake.

7. Environmental Investigation of Doane Lake Area. A representative from the Association of Oregon Industries and representatives of elected officials indicated concern that DEQ's environmental investigation in the Doane Lake area could decrease future industrial development and jobs in the community.

No reports of decreased industrial development as a result of these investigations has been received by EPA.

8. Disposal of Battery Casings. An aide to Representative AuCoin's office expressed dissatisfaction that battery casings had not been removed from the site. Representatives from the Portland Department of Public Works cautioned that any plan to dispose of waste materials at St. John's Landfill would be unpopular.

EPA intends to recycle as much of the battery casing components as is feasible.

During the investigation and reporting phases of the RI/FS, fact sheets were produced and mailed out to the community and the press to keep them informed of progress at the site. EPA and DEQ also consulted by phone with several prominent community members about issues of concern shortly before review and evaluation of the RI/FS produced by the contractor.

Two public meetings were held to discuss the results of these studies and EPA's proposed plan: the first on February 18th and the second on March 10th. The results of these meetings and comments received are discussed in the next section.

SECTION CSUMMARY OF COMMENTS RECEIVED DURING THE PUBLIC COMMENT PERIOD

The comment period was held from February 16, 1988, to March 18, 1988, and included two public meetings. Comments and questions raised during the NL/Gould public comment period on the draft FS and the proposed plan are summarized briefly below. Comments are grouped and categorized by subject. Detailed comment letters from the PRPs are summarized, along with the Agency's response at the end of this section.

Approximately 50 people attended each of the two public meetings. Each meeting consisted of about 45 minutes of presentations followed by question and answer and public comment opportunities. The audience questioned EPA, the potentially responsible parties, and their consultant, Dames and Moore, about the site, the studies, the alternatives, and the Superfund process. At the first meeting, citizens requested a second public meeting and additional explanation by EPA of the preferred alternative as well as other alternatives. This resulted in the second meeting. For that meeting, the PRPs requested an opportunity to make a presentation. Dames and Moore were given about 20 minutes at the second meeting to present their results and evaluation of the remedial alternatives. Transcripts of both meetings are available in the Administrative Record.

After reviewing all the comments received during the public comment period, EPA has determined that residents of the local communities, local environmental groups, and the Oregon Department of Environmental Quality strongly support EPA's proposed plan.

Preference for Remedial Alternative

A total of 21 comments were received supporting EPA's proposed alternative and recommending the long range cleanup of the site. In addition to their support, the following more detailed comments were made:

1. The Northwest District Association's Health and Environment Committee prefer Alternative 10C. However, they recommended that the selected remedy be expanded to clean up all pollutants in the groundwater and provide continuous groundwater and air monitoring to ensure that contaminants do not migrate into the environment.

EPA Response: The intent of the selected remedy is to insure that all health and environmental hazards posed by sediments, soils, and casings at the site are addressed by

treatment. Monitoring and control of air emissions will be a priority during remedial design, and groundwater issues will be resolved at the conclusion of the groundwater studies planned for later this year (see Section D).

2. The Oregon Department of Environment Quality recommends Alternative 10C. DEQ does not feel that Alternative 2C will be satisfactory to the state. If 2C is implemented, there is a high probability that the site would be revisited under the state's new Superfund authority.

EPA Response: These and other concerns about Alternative 2C contributed to EPA's choice of the selected remedy described in Section VI of the ROD.

3. The Oregon State Public Interest Research Group (OSPRIG) preferred a complete cleanup of the site. Of the alternatives described in the FS, they preferred and recommended implementation of Alternative 10C. OSPRIG raised questions about how thorough the site characterization was and supported additional, more comprehensive, groundwater studies. Concerns were expressed with any solution leaving hazardous materials on site, since the site is within the 100 year floodplain of the Willamette River. OSPRIG also expressed concern about site access and casual exposure to the hazards at the site, and that there are no signs warning of the presence of hazardous waste at the site. OSPRIG also recommended setting up a working task group made up of citizens, local officials, and academics.

EPA Response: The selected remedy will address the contaminated soils, sediments, battery casings, and other solids. The current information available on the surface and groundwater at and around the site is insufficient to make a decision on how to clean up those areas at this time. EPA will propose additional remedial measures for ground and surface water, if necessary, after further studies are complete next year (see section D).

The company has been asked to take measures to restrict access and to warn of the presence of hazardous materials.

Working task groups consisting of citizens, local officials, etc., have worked in some communities and may be set up for the Gould site if there is enough interest.

4. Several other citizens expressed support for the preferred alternative and added their opinion that the community would only accept solutions that fully addressed toxicity and mobility of both surface and subsurface contaminants.

EPA Response: The selected remedy is intended to reduce the mobility, toxicity and volume of contaminants to the maximum extent practicable.



5. The PRPs and their representative recommended Alternative 2C.

EPA Response: Alternative 2C would not meet the Superfund mandate to reduce toxicity, mobility, and volume to the extent practicable as well as the selected remedy. This recommendation and other concerns are addressed in more detail in letters from NL Industries and Gould. A summary of the concerns raised in those letters as well as EPA's detailed responses to those concerns are included at the end of this section.

#### Technical Concerns/Questions Regarding Remedial Alternatives

1. Resident expressed concern about reliance on institutional controls for the site.

EPA Response EPA does not believe that institutional controls alone will be protective if the contaminated material remains on site untreated. However, institutional controls may be necessary in addition to the selected remedy to ensure protection of public health.

2. Citizen asked what lead standard will EPA use at this site, the current standard or a new standard if one is proposed/promulgated before remedial action starts at the site.

EPA Response: The selected remedy is based on the current lead standard (50 parts per billion). EPA will consider changing to any new standards if they are more protective of human health or the environment.

3. Citizen asked whether the selected remedy would result in creation of a hazardous waste landfill by fixing the lead in the soil.

EPA Response: The proposed plan would not involve creating a RCRA (hazardous waste) landfill. The contaminated materials would be treated in such a way that they would no longer have the properties that would make them a hazardous waste.

4. Citizen asked whether there would be any sodium hydroxide problems with the preferred alternative.

EPA Response: There should not be any sodium hydroxide problem. A treatment facility on the site would be constructed to treat the 20,000 yards of contaminated soils. Then the clean material would be covered with some imported top soil and capped with new growth vegetation.

5. Citizen asked whether the technology needed to recycle lead out of the casings is currently available.

EPA Response: Pilot tests have shown that recycling is possible. Additional design work will be done to apply the technology to the Gould site.

6. Citizen asked how long monitoring would continue.

EPA Response: Under Superfund law, monitoring may continue for an extended period of time. Under the new law, EPA is required to re-evaluate the site once every five years to determine if additional clean up is necessary.

7. Citizen asked whether Alternative 10C will involve draining the lake and dredging all the sediments.

EPA Response: Alternative 10C will involve dredging the sediments out of the lake, not draining the lake.

8. Citizen asked whether draining the lake to reach contaminated bottom sediments would be easier than dredging sediments and then treating them.

EPA Response: No, because the lake basically represents the surface of the groundwater at the site. If the lake was drained, it would re-fill.

9. Citizen asked what current technology is available to remove sediments in the lake.

EPA Response: Options would include a variety of dredging systems. This is one of the items that will be dealt with in the design of the selected remedy.

10. Citizen asked about the history of filling Doane Lake and how much of it has been filled with battery casings and when was the last time it was routinely done.

EPA Response: Based on dated aerial photos taken throughout the years, significant areas of the lake have been filled. The other remaining fill is just a variety of different types of material. NL Industries says the last time casing were used as fill was 1972.

11. Citizen asked whether the aquifer has been examined for lead and whether it has ever been examined in times of overflow to see how much lead is going into the river.

EPA Response: River impacts have been estimated based on discharges from the overflow storm drain for East Doane Lake.

12. Citizen asked about whether there was sufficient site characterization.

EPA Response: EPA feels the site characterization was sufficient to make a decision about soils, sediments, and battery casings. There still is contaminated groundwater at the site and we do not feel that the situation there has been adequately addressed. Additional groundwater studies are being planned.

13. Citizen asked about the future use of the property.

EPA Response: The future use of the property will depend on the success of the remedial action. It is likely that some institutional controls or restriction on use of the property will be part of the final remedy; however, the full extent of those controls will not be determined until later.

#### Costs/Funding

1. Citizen requested information on costs and who would pay for the cleanup.

EPA Response: Since the PRPs are conducting the RI/FS, EPA will first negotiate with the PRPs to arrange to have them pay for the cleanup as well as for any costs incurred by EPA during the cleanup.

If negotiations with the PRPs fail monies could come from the federal trust fund set up for Superfund.

2. Citizens asked several questions about the basis of the price estimates for the alternatives.

EPA Response: Cost estimates are based on Superfund program guidance and general cost estimation guides. The basis for these specific cost estimates is given in Appendix C of the FS report.

### Public Participation

1. Citizens at the first public meeting expressed a concern that they had not had enough time or information to fully comment on the issues. As a result, they requested a second public meeting and additional explanation by EPA of the preferred alternative and Alternative 2C.

EPA Response: The first public meeting was held at the Northwest Service Center, Thursday, February 18, 1988, to explain the results of the investigations and to discuss the recommended remedial alternatives. In response to requests from the citizens, EPA provided additional materials written in less-technical language explaining the alternatives and scheduled a second meeting. A second public meeting was held on March 10, 1988.

2. The PRPs requested an opportunity to speak at the second public meeting and describe in their own words their reasons for preferring Alternative 2C (Additional concerns raised by the PRPs are summarized and responded to at the end of this section).

EPA Response: At the second meeting, EPA allowed Dames & Moore (the consulting firm which performed the RI/FS) to make a brief presentation describing the relative merits of various alternatives. At both meetings, citizens were invited to address questions directly to the PRPs and their consultants as well as to the Agency. (At the first meeting, the PRPs and consultants were given the same opportunity as all others in attendance to make comments on the record.)

Health Issues

1. Citizens expressed concern regarding long term health effects of exposure to contaminants at the site.

EPA Response: Lead and the other contaminants at the site are known to cause developmental problems in children who are exposed, as well as renal problems. Under the No Action Alternative, the Endangerment Assessment prepared for NL and Gould showed exposures above health based levels. The selected remedy would reduce the risk of exposure to below these levels.

2. Citizen asked whether women, particularly those of child-bearing age, were more sensitive to renal problems and other potential adverse health affects, and whether that was taken into account in the studies.

EPA Response: Based on the Endangerment Assessment, children are seen as the most sensitive group in terms of lead impacts.

3. Concern regarding reproductively-aged persons working and living close to the site and about renal toxicity.

EPA Response: In the Endangerment Assessment, altered testicular function and renal dysfunction were among the reported effects of elevated blood lead levels.

4. Citizens and neighboring businesses have raised concerns about the health and safety of nearby workers during and after any remedial action.

EPA Response: EPA has expressed its intent to implement the selected remedy in a manner that is fully protective of public health, based on the National Ambient Air Quality Standard for lead. Specific measures will be part of the remedial design which will be presented for public comment before implementation.

Comments/Concerns Raised by Neighboring Businesses

1. Since ESCO corporation boundary is immediately adjacent to the NL/Gould, Inc. site, ESCO objects to any requirements which might be imposed upon ESCO or its property in connection with proposed EPA cleanup recommendations concerning the remedial work at the Superfund site.

EPA Response: Noted.

2. Pennwalt Corporation wished to make a correction to the FS report. Pennwalt has never manufactured or even handled sodium arsenite or any other substances containing arsenic. The plant is not a hazardous waste generator and does not customarily ship wastes to Arlington. The report also infers that brine purification residue is a hazardous by-product. The residue consists of calcium carbonate and magnesium hydroxide and has a pH of 10 to 11. This material is not hazardous waste.

EPA Response: Noted.

3. Richard Bach, attorney representing the Northwest National Gas Company, and James Benedict, attorney representing Rhone-Poulenc, Inc. both commented that it was their understanding that actions and records to date regarding the NL/Gould site would not be part of the Administrative Record for the planned groundwater study.

EPA Response: An Administrative Record for the Record of Decision for the groundwater/surface water unit at this site will be developed. That Administrative Record will contain those documents necessary to support appropriate remedial actions.

4. The attorney for Rhone-Poulenc, Inc. raised concerns about access to the Rhone-Poulenc property during RD/RA and about possible institutional controls which might affect company property, and stated while the issues were not resolved, the company is willing to discuss those issues.

EPA Response: EPA considers this additional reasons to question the effectiveness of institutional controls as a means of protecting public health at this site.

### Comments from Potentially Responsible Parties

Concerns raised in the comment letter from NL Industries, dated March 15, 1988, are detailed and responded to below:

- 1) The site presents little if any threat to public health or the environment.

EPA Response: The Endangerment Assessment prepared by the PRP's does in fact show that under the No-Action Alternative AICs are exceeded for some of the exposure scenarios.

- 2) The site would not qualify today for inclusion on the NPL.

EPA Response: This statement is untimely and moot. Since the site is on the NPL, EPA is required by law to conduct a RI/FS study and take appropriate remedial action consistent with CERCLA. The ROD and Selected Remedy reflect the agency's attempt to do that. Based on the Endangerment Assessment prepared by Dames & Moore for NL and Gould, EPA has determined that the No-Action Alternative poses unacceptable health risks, and therefore remedial action is required at this site.

- 3) As indicated in the FS, only Alternative 2C is rated as "high" across-the-board.

EPA Response: As indicated in the Detailed Evaluation of Alternatives section of the Record of Decision, EPA's evaluation of the Alternatives differs from NL's.

- 4) Alternative 10C will result in recycling 3 per cent of material.

EPA Response: Using information from the FS, Alternative 10C is estimated to recycle over 1,000 tons of lead, or about 25% of the total lead in the battery casings.

- 5) Implementation of Alternative 10C involves substantial air emissions.

EPA Response: EPA has reviewed Attachment 2 of NL's letter. Several assumptions and approaches used in the report lead to conservative emission estimates and correspondingly high estimated ambient lead concentrations. Namely:

- \* Some of the emission factors taken from AP-42 include general emission factors that are used to represent a variety of processes, including blasting. As a result, these factors are considered conservative.
- \* A variety of controls are available that will provide dust suppression in excess of that assumed by NL. These include biodegradable oil based dust suppressants, controls on vehicle speeds, controls on drop heights, and coverings over specific fugitive emission points. In particular, emissions from conveyors, which are responsible for most of the estimated fugitive emissions from remediation, are particularly well suited to fugitive dust controls.

- \* The modeling performed in the report was done without the use of on-site or local meteorological data, despite the fact that data were available for use in the model. Instead, worst case assumptions were used to generate a one-hour average, which was later adjusted to a quarterly average. This is an inappropriate use of the ISC model and leads to overly conservative concentration estimates. Other assumptions in the modeling which lead to conservative estimates include: simulation of sources as area sources rather than volume sources; and the close proximity of receptors to assumed area source boundaries, which the user's manual for the ISC model indicates will generate higher estimated concentrations.

In conclusion, EPA's opinion is that NL's emission rates are conservative and that the emissions from Alternative 10C can be controlled to such an extent that the operations should comply with the lead NAAQS. It is EPA's intent to comply with this standard in implementing Alternative 10C.

7) Alternative 10C relies on unproven technology.

EPA Response: The battery recycling equipment used in the pilot studies was conventional machinery. During the pilot studies that equipment was able to recycle the material from the Gould site. EPA recognized that there were some materials handling problems associated with those tests and that those problems will require additional design work before a facility is constructed at the Gould site. However, it is EPA's opinion that the basic technology for implementing 10C is proven.

8) EPA and DEQ have failed to follow basic administrative and environmental law principles in selecting their preferred alternative.

EPA Response: EPA and DEQ, after reading the draft FS, expressed support for an alternative that represented a variation of an alternative presented in the draft FS. It was requested that this alternative be further developed so that EPA and DEQ could evaluate it in more detail. During subsequent meetings in January, NL and Gould provided EPA and DEQ with sufficient additional information that the agencies were further able to evaluate this alternative and prepare a proposed plan for the public. This information was provided to EPA prior to the delivery of the final FS report.



- 9) EPA and DEQ ignored the recommendations of the report prepared by Environmental Standards regarding risks from remedial actions.

EPA Response: EPA evaluated the report along with the FS. As the record of decision shows, EPA's evaluation of the Alternatives differs from that contained in FS report. EPA's evaluation differs from Environmental Standards on this particular issue in that EPA has expressed its intent to implement 10C in a manner that is fully protective of public health. During design estimates will be made of fugitive emissions from the designed facilities and if it appears that estimated fugitive emissions result in exceedences of the NAAQS for lead, design modifications may be required. In addition, during remediation, if violations are noted, activities will be halted or curtailed. By doing this EPA expects to minimize off site deposition of lead such that the spread of contamination from the site on to adjacent properties should not occur. By "spread of contamination" EPA means a statistically significant increase above background levels.

- 10) Alternative 10C is not cost effective and results in costs of \$11,000 per ton of recyclables.

EPA Response: The \$11,000 per ton figure appears to be based on the total cost for entire remedy; the cost for the recycling portion alone appears to be far less than this. For example, the detailed costs for this alternative include estimated costs of over \$2,500,000 per year to dispose of the material at a hazardous waste landfill. EPA has stated that it intends to minimize the amount of material that requires RCRA disposal. Also, in the screening of alternatives section of the Record of Decision, EPA states that the higher costs of Alternative 10C are commensurate with the higher long term effectiveness and greater reduction in volume of lead in the waste stream achieved by this remedy.

- 11) Institutional controls can be used effectively, those controls are as much a part of 10C as they are of 2C, and they are widely accepted by EPA.

EPA Response: Although institutional controls are mentioned in both 10C and 2C, the controls differ in the extent to which they are part of a complete remedial package. In 10C controls will be used in areas where contamination has been treated to the maximum extent practicable, while in 2C they are not. In addition, EPA questions the effectiveness of institutional controls, particularly on portions of the site that are not owned by Gould (see comment #4 on page 12).

- 12) Has EPA/DEQ considered the impacts of utilizing some 80,000 yards of landfill space.

EPA Response: EPA and DEQ have considered the impacts of disposing of 80,000 yards of material in a RCRA landfill and consider them to be an undesirable requirement associated with implementing the selected remedy. EPA intends to devote extensive design effort to developing a process that will minimize the amount of material that will require disposal in a RCRA landfill. If based on the results of the design phase, it appears that the goals of treating all of the battery casings and minimizing the amount of material requiring RCRA disposal are not compatible, an additional public comment period will be established, and the Record of Decision may be modified. At such time, EPA would present to the public other options which are equally or more protective of public health that allow this material to remain on site.

- 13) The discrepancies between EPA's decision at this site and EPA's decision at the Newport Dump site were noted.

EPA Response: In each case it appears that EPA evaluated the site in accordance with the requirements of CERCLA. Using the same approach at different sites can result in different decisions, depending on the specific alternatives available for remediation, the specific health and environmental threats, and the laws and regulation that are considered ARARs.

- 14) EPA modified Alternative 10C in presenting it to the public.

EPA Response: EPA described additional work that was being done on cleaning ebonite to point out that additional steps that were possible aside from the washing steps include in the pilot studies. It is EPA's intent to design a treatment plant that is generally consistent with the processes presented in the FS by NL and Gould.

- 15) Inconsistencies were noted in the Supplement to the Draft Feasibility Study of Cleanup Alternatives for the NL/Gould Superfund Site.

EPA Response: The one inconsistency that has not been addressed earlier in this response involves differences between the evaluation of the protectiveness of the cap under Alternatives 2C and 10C. Although the cap under 2C is thicker, the overall protectiveness of a cap in this situation is not considered as high because of the higher levels of contamination that will exist under the cap in Alternative 2C.

Concerns raised in the comment letter from Gould, Inc., dated March 18, 1988, are detailed and responded to below:

1) Alternative 10C is so dangerous to human health and welfare and to the environment that it subjects EPA to massive third-party liability for personal injury and property damage.

EPA Response: As stated elsewhere in this Record of Decision, EPA intends to implement 10C in a manner that is protective of public health and complies with ARARs, including the NAAQS lead standard. Given EPA's intent regarding the implementation of 10C, it is not anticipated that the agency will have to rely on any shield provided by the Federal Tort Claims Act or liability limitations provided for within CERCLA as amended.

2) EPA's proposal to select Alternative 10C is not supported by the record, is inconsistent with statutory and regulatory criteria, and will be overturned by judicial review.

EPA Response: EPA believes that the selected remedy is consistent with statutory and regulatory criteria. The standard for judicial review is the arbitrary and capricious standard. EPA's selection must be upheld unless the objecting party can demonstrate on the Administrative Record that the remedy is arbitrary and capricious and an abuse of discretion or otherwise not in accordance with the law. The agency believes that its decisionmaking process as demonstrated by this Administrative Record is both deliberate and contemplative of all considerations.

3) Gould feels that for EPA to select Alternative 10C would be arbitrary, capricious, unlawful, and an abuse of discretion that will violate all applicable criteria for remedy selection.

EPA Response: See response above.

4) Gould feels it would be arbitrary, capricious, unlawful, and an abuse of discretion to select an alternative not supported by the ROD

EPA Response: See response to #2.

5) Gould feels EPA cannot properly take public acceptance into account where it has misrepresented the record to the public.

EPA Response: The public hearings were recorded and PRP's were given sufficient opportunity to present their alternative. The agency has presented both its views and the views of the PRPs to the public during the comment period, and has complied with all requirements for public notice and comment as established by CERCLA as amended.

6) Gould feels it was unlawful for EPA to add the Portland site to the National Priorities List ("NPL")

EPA Response This statement is untimely and moot. Since the site is on the NPL, EPA is required by law to conduct a RI/FS study and take appropriate remedial action consistent with CERCLA. The ROD and Selected Remedy reflect the agency's attempt to do that.

7) If Alternative 10C is selected and implemented, EPA and the PRPs will potentially be subject to massive and costly litigation.

EPA Response: This concern as raised by Gould refers to either litigation brought by the PRP's against the agency or third party liability actions brought by other parties. As to third party liability actions, as stated elsewhere in this Record of Decision, EPA intends to implement 10C in manner that is protective of public health and complies with ARARs, including the NAAQS lead standard. Given EPA's intent regarding the implementation of 10C, it is not anticipated that the agency will have to rely on any shield provided by the Federal Tort Claims Act or liability limitations provided for within CERCLA as amended. As to PRP generated litigation, EPA considers the risk of such litigation to be endemic to the CERCLA process, especially in such instances where EPA's proposed remedy differs from that of the PRP's. Such litigative risk should not bear weight in arriving at an appropriate remedy under CERCLA as amended.

SECTION DREMAINING CONCERNS

This section describes issues and concerns that EPA has not been able to address to date or must continue to address during RD/RA.

- How contaminated is local groundwater and what will be done about it?

EPA Response: EPA was unable to fully address this since additional investigation is required to fully characterize local groundwater and the impacts of surrounding industries and to evaluate feasible remedies. Additional studies of a wider area are in the planning stages and results are expected by Spring or Summer of 1989.

- Citizen asked what water quality standards the remedy would have to achieve, and if we did not know, how could EPA select a cleanup alternative.

EPA Response: EPA has decided to select a remedy for soils, sediments, and casings, but to defer the groundwater remedy until we have additional information. Cleanup and monitoring levels for ground and surface water will be determined at that time.

- Who will pay for the remedy?

EPA Response: EPA was unable to address this since negotiations with the PRPs remain unresolved.

Citizens raised the following concerns and questions regarding details of the design of the proposed plan/selected remedy which will have to be responded to in the remedial design process:

- How will EPA take into account BPA power lines across adjacent properties which must provide uninterrupted electrical service?
- If lead is binding to the soil, is there a saturation point and how long will it be before the lead/soils reach the saturation point and start leaching out and contaminating groundwater?
- During cleanup, will the soils at the edge of the Gould property would be disturbed?

- What precautions will be taken to control dust and airborne lead emissions when materials are excavated and/or transported from the site? (Some related issues were addressed in answer to the PRPs concerns)
- Is there a risk that air emissions from the site could be electrically conducted and cause a risk to/from the neighboring power lines?
- Has EPA examined the existence or lack thereof of biomethylation of lead and arsenic and does the selected remedy prevent any further biomethylation.

**EPA Response:** EPA will address all the above issues during remedial design.

Citizens also requested the following:

- That EPA keep the public, including workers in the area, informed in a timely manner of the results of engineering studies, pilot tests, and other aspects of remedial design of the selected remedy. EPA will prepare and distribute fact sheets periodically and as appropriate.

**EPA Response:** EPA will provide an opportunity for public comment, including a meeting, to discuss the remedial design before it is approved or completed by EPA.

- That EPA continue with the groundwater studies being planned and report back to the community.

**EPA Response:** The studies will be done and EPA will provide a public comment period and meeting when results are available.

- That EPA carefully monitor and control air emissions during remediation to minimize airborne lead emissions.

**EPA Response:** EPA will specify and if necessary conduct airborne emissions monitoring and control measures during RD/RA.

APPENDIX C  
ADMINISTRATIVE RECORD

<u>Doc. No.</u>	<u>File</u>	<u>Type/Description</u>	<u>Date</u>	<u>Pages</u>	<u>Author/Organization</u>	<u>Addressee/Organization</u>
00000001.	Pre Superfund	Letter re revised proposal for ground water monitoring program; well diagram, schedule of charges	12/24/81	9	K. C. Robbins, Dames & Moore	J.G. Papp, Gould
00000002.	Pre Superfund	Factual report Ground Water Monitoring Program, Portland plant site, Portland, Oregon	3/29/82	33	Dames & Moore on behalf of Gould, Inc.	
00000003.	Pre Superfund	Sampling report re air sampling survey at Gould site; attached sample analysis	9/13/82	9	Paul Boys, EPA	—
00000004.	Pre Superfund	Letter with attached lab analyses re ground water analyses at Gould site	11/9/82	4	Andrew Larson, Gould, Inc.	Charles R. Clinton, Oregon DEQ
00000005.	Pre Superfund	Lab analysis re Oregon Rivers Project Sample #35402, 35404, 35405, 35407, 35409, 35413, 35415, 35417, 35419, 35421, 35423, 35430	1/21/83	16	EPA Lab	—
00000006.	Pre Superfund	Maps, notes re water right applications in Gould-Rhone Poulenc area; well record and street diagram re Gould site	4/13/83	6	—	—
00000007.	Site evaluation report	Potential hazardous waste site tentative disposition; inventory--possible sources of hazardous waste; map and a diagram of Doane Lake area; potential hazardous waste site identification and preliminary assessment re Gould site	8/15/79	9	EPA	—
00000008.	Site evaluation report	Potential hazardous waste site log re Gould site	11/29/79	1	J. W. Fey, EPA	—
00000009.	Site evaluation report	Potential hazardous waste site--final strategy determination re Gould site	3/29/80	1	Robert Stamnes, EPA	—
00000010.	Site evaluation report	Potential hazardous waste site--site inspection report and diagram of air monitoring stations re Gould site	8/26/82	10	Paul Boyes, EPA	—



00000011.	Site evaluation report	Report re visit to Gould site	2/6/85	4	—	—
00000012.	Site evaluation report	Potential hazardous waste site—site identification; attached letter from Army Corps of Engineers to EPA re identification of hazardous waste disposal sites	9/2/86	2	Homer W. Westcott, Army Corps of Engineers	—
00000013.	Site evaluation report	Description of Gould site and proposed work with attached site map	—	4	—	—
00000014.	NPL proposal/comments on proposal	Excerpt from Federal Register, Vol. Vol. 7, No. 251, re EPA, 40CFR Part 300, amendment to National Oil and Hazardous Substance Contingency Plan; The National Priorities List	12/30/82	9	—	—
00000015.	NPL proposal/comments on proposal	Excerpt from Federal Register, Vol. 48, No. 175, re EPA, 40CFR Part 300, Amendment to National Oil and Hazardous Substance Contingency Plan; National Priorities List	9/8/83	18	—	—
00000016.	Permits	EPA—Notification of Hazardous Waste Activity re Gould site	8/12/80	2	Frank E. Moore	—
00000017.	Permits	EPA—General information form, consolidated Permits Program re Gould site	11/13/80	7	Croft L. Smith, Gould, Inc.	—
00000018.	Permits	EPA—Notification of Hazardous Site re Gould site	6/3/81	1	M. E. Elmore, Gould, Inc.	—
00000019.	Permits	Letter re request by Gould, Inc., to withdraw TSD permit application for Gould site; EPA—General Information, Consolidated Permits program	8/17/81	10	David C. Ross, Gould, Inc.	Linda Dawson, EPA
00000020.	Remedial Action Master Plan	Final, Remedial Action Master Plan, Gould, Inc., Portland, Oregon	11/4/83	87	CH <sub>2</sub> M Hill	—

00000021.	Administrative Order	Administrative Order on Consent re RI/FS by Gould. EPA docket #1085-85-08-106	8/28/85	27		NL Industries, EPA, Gould, Inc.
00000022.	Sampling plans/protocol/QA&QC plans	Memo re Doanes Lake district of Portland - aquifer test	10/26/84	3	Bill Robertson/Bart Bartholomew, State of Oregon	Ernie Schmidt, State of Oregon
00000023.	Sampling plans/protocol/QA&QC plans	Letter re comments on draft Technical Resource document entitled "Solid Waste Leaching Procedure"	12/2/85	2	William K. Weddendorf, NL Industries, Inc.	Patricia Storm, EPA
00000024.	Sampling plans/protocol/QA&QC plans	Quality Assurance Plan re Gould site	4/18/86	2	—	—
00000025.	Sampling plans/protocol/QA&QC plans	Appendix C--Quality Assurance Project Plan re Gould site	9/16/86	5	—	—
00000026.	Sampling plans/protocol/QA&QC plans	Memo re water sampling and analysis methods for NL/Gould	10/27/86	1	Harlan Borow, Dames & Moore	Mark Anderson, Dames & Moore
00000027.	Sampling plans/protocol/QA&QC plans	Letter re agreement with respect to sampling and monitoring; agreement and diagram of Gould site	1/16/87	5	Mark C. Rutzick, Preston, Thorgrimson, Ellis & Holman	Patricia Cirone-Storm, EPA
00000028.	Sampling plans/protocol/QA&QC plans	Letter re change in ground water sampling procedures at NL/Gould site	2/18/87	1	Mark Anderson, Dames & Moore	Patricia C. Storm, EPA
00000029.	Sampling plans/protocol/QA&QC plans	Letter re repurge wells and Ph values at Gould site	2/25/87	1	John D. Cooper, Dames & Moore	Patricia C. Storm, EPA
00000030.	Community relations/public participation	Letter and attached copy of preliminary community relations assessment for Gould site	11/23/83	9	Nancy Jerrick, CH2MHill	Phil Millam, EPA
00000031.	Community relations/public participation	Memo re keeping Linton Community Center advised of cleanup progress at Gould site	5/23/85	1	J. A. Gillaspie, Oregon DEQ	Pat Storm, EPA
00000032.	Community relations/public participation	Community relations--work plan memo for the Gould, Inc., site	7/25/85	6	Camp Dresser & McKee, Inc.	EPA

00000033.	Community relations/public participation	Fact sheet and diagram showing locations of monitoring wells and sampling points	8/13/85	4	—	—
00000034.	Community relations/public participation	Final Community Relations Plan, Gould, Inc., site, Portland, Oregon	12/85	26	Camp Dresser & McKee, Inc.	EPA
00000035.	Community relations/public participation	Gould site update and map of vicinity	1986	1	—	—
00000036.	Community relations/public participation	Statement of work, Community Relations Plan	—	3	—	—
00000148.	Community relations/public participation	Transcript of public hearing, Portland, OR	2/18/88	108	—	—
00000149.	Community relations/public participation	Transcript of public hearing, Portland, OR	3/10/88	63	—	—
00000037.	Newspaper clippings	"Toxic wastes to delay Wacker expansion," with attached diagram of Doane Lake area	6/15/85	2	Steve Jennings, The Oregonian	—
00000038.	Newspaper clippings	"Portland industrial site is unofficial toxic dump"	6/25/85	1	The Journal-American (Bellevue)	—
00000039.	Newspaper clippings	"Portland's toxic armpit"	8/8/85	6	Garrett Romaine, Willamette Week	—
00000040.	Newspaper clippings	"Gould property to undergo extensive examination" and "Superfund blasted as Superfailure"	9/10/85	1	Spencer Heinz, The Oregonian	—
00000041.	Newspaper clippings	"Superfund forges on amid identity crisis, criticisms"	9/29/85	3	Spencer Heinz, The Oregonian	—
00000042.	Newspaper clippings	EPA news release re start of investigation at Gould site	4/14/86	1	EPA	—
00000043.	Newspaper clippings	"Procedures for cleanup underway"	4/17/86	1	The Oregonian	—

00000044.	Newspaper clippings	"Packwood charged with stalling on Superfund" and "Superfund a must"	9/27/86 & 9/29/86	1	The Oregonian	---
00000045.	Newspaper clippings	"Positive toxic-waste tests delay Wacker expansion in Portland"	---	1	---	---
00000046.	Workplan and modification	Gould, Inc., site Remedial Investigation and Feasibility Study Workplan	3/31/86	372	Dames & Moore	EPA
00000125.	Workplans/modifications	Letter and attachments re RI/FS Workplan modifications	6/25/86	5	Anne M. Topker, Mark W. Anderson,	Patricia C. Storm, EPA
00000126.	Workplans/modifications	Letter and attachments re RI/FS Workplan modifications	8/22/86	3	Mark W. Anderson, Dames & Moore	Patricia C. Storm, EPA
00000132.	Work plans/modifications	North Doane's Lake Site Characterization Work Plan	6/87	95	Camp, Dresser & McKee, Inc. Dames & Moore	EPA
00000047.	Remedial investigation/draft reports--Folder 1	Remedial Investigation, NL/Gould site, Portland, Oregon--draft report, Vol. 1, text	6/1/87	272	Dames & Moore	EPA
00000048.	Remedial investigation/draft reports--Folder 1	Remedial Investigation, NL/Gould site, Portland, Oregon--draft report, Vol. 2, Appendices	6/1/87	352	Dames & Moore	EPA
00000049.	Remedial investigation/draft reports--Folder 2	Preliminary remedial technologies report, Gould, site Remedial Investigation and Feasibility Study	6/7/86	16	Dames & Moore on behalf of NL Industries and Gould, Inc.	
00000050.	Remedial investigation/draft reports--Folder 2	Hydrogeological data report--interim evaluation, NL/Gould RI/FS, Portland, Oregon; attached Plates 1A, 1B, 1C	2/27/87	104	Dames & Moore on behalf of NL Industries and Gould, Inc.	
00000051.	Remedial investigation/draft reports--Folder 2	Letter re comments on hydrogeological report prepared by Dames & Moore for Gould site	4/27/87	2	Patricia C. Storm, EPA	James E. Tracewski, NL Industries, Inc.
00000133.	Remedial Investigation/Final Reports, Folder 1	Remedial Investigation Final Report, Vol. 1, text and figures	11/16/87	290	Dames & Moore	EPA

00000134.	Remedial Investigation/Final Reports, Folder 2	Remedial Investigation Final Report, Vol. 2, text and figures	11/16/87	313	Dames & Moore	EPA
00000139.	Remedial Investigation/Draft Reports - Folder #2	Cover letter regarding attached Draft Response to Comments on Hydrogeologic Issues RI Report.	9/24/87	93	Dames & Moore	David Tetta, EPA Bill Renfroe, Oregon DEQ
00000052.	Correspondence/RI/FS	Letter re EPA request to Army Corps of Engineers to act as on-site representative during RI/FS at Gould site; attached Scope of Work for technical assistance	8/28/85	3	Patricia C. Storm, EPA	Costas Zogas, Army Corps of Engineers
00000053.	Correspondence/RI/FS	Memo with attached letter, interagency agreement and workplan for agreement between EPA and Army Corps of Engineers re oversight of RI/FS at Gould site	10/4/85	6	Patricia C. Storm, EPA	Curt Lambert, EPA
00000054.	Correspondence/RI/FS	Letter re RI/FS activities at Gould site	11/14/85	2	Michael C. Veysey, Gould, Inc.	Patricia C. Storm, EPA
00000055.	Correspondence/RI/FS	Letter re issues raised at Nov. 13, 1985, meeting and RI/FS activities at Gould site	11/20/85	2	Patricia C. Storm, EPA	Michael Veysey, Gould, Inc.
00000056.	Correspondence/RI/FS	Letter and draft Response Measures Program for Surface Debris at Gould site	1/14/86	20	William K. Weddendorf, NL Industries, Inc.	Patricia Cirone-Storm, EPA
00000057.	Correspondence/RI/FS	Letter re status of surface debris at Gould site	6/9/86	2	F. R. Baser, NL Industries, Inc.	Patricia Cirone-Storm, EPA
00000058.	Correspondence/RI/FS	Letter re July 29, 1987, meeting and comments on draft Remedial Investigation Report and Feasibility Study Report	7/31/87	2	David Tetta, EPA	James E. Tracewski, NL Industries, Inc.
00000059.	Meetings: RI/FS	Schedule and agenda for Gould site briefing	8/19/85	3	—	—
00000060.	Meetings: RI/FS	Letter and proposed agenda for briefing on environmental issues by EPA	9/12/85	2	Don Larsen, EPA	Ann Warner, Office of Senator Mark O. Hatfield

00000061.	Meetings: RI/FS	Notes re coordination meeting for Gould site and attached list of site contacts	11/9/85	3	Kathryn Carlson, Army Corps of Engineers	—
00000062.	Meetings: RI/FS	Memo re meeting between EPA and Oregon DEQ re hazardous cleanup at Doane Lake	5/20/86	3	Patricia C. Storm, EPA	Addressees, EPA, DEQ
00000063.	General correspondence	Letter re cleanup of Doane Lake district	1/3/86	2	Michael J. Downs, Oregon DEQ	Chuck Findley, EPA
00000064.	General correspondence	Letter re removal of debris from Gould site by local smelter	1/21/86	1	Patricia C. Storm, EPA	Michael Veysey, Gould, Inc.
00000065.	General correspondence	Letter, handwritten notes and receipts re removal of surface debris from Gould site by local smelter	2/4/86	4	Michael C. Veysey, Gould, Inc.	Patricia C. Storm, EPA
00000066.	General correspondence	Letter re calculation of volume of rubber and crushed battery casings at Gould site	3/17/86	2	Kent W. Cox & Assocs., Inc.	James A. Gibbs, Gould, Inc.
00000067.	General correspondence	Letter re removal of surface debris from Gould site	3/21/86	2	William K. Weddendorf, NL Industries, Inc.	Patricia Cirone-Storm, EPA
00000068.	General correspondence	Letter and workplan re drum disposal/ battery casing transportation	6/10/87	6	Mark D. Schultheis, Dames & Moore	Patricia Storm, EPA, and Tom Miller, Oregon DEQ
00000069.	Feasibility study/draft report	Feasibility study, Phase B report	6/5/87	61	Dames & Moore	EPA
00000137.	Feasibility Study/Draft Reports, Binder #1	Feasibility Study, Volume 1, Text	11/19/87	310	Dames & Moore	EPA
00000138.	Feasibility Study/Draft Reports, Binder #2	Feasibility Study, Volume 2, Appendices	11/19/87	318	Dames & Moore	EPA

00000140.	Feasibility Study/Final Report	Feasibility Study Final Report, Vol. 1, Text	2/88	545	Dames & Moore	N.L. Industries Gould, Inc. Dave Tetta, EPA Bill Renfro, DEQ
00000141.	Feasibility Study/Final Report	Feasibility Study Final Report, Vol. 2, Appendices	2/88	447	Dames & Moore	N.L. Industries Gould, Inc. Dave Tetta, EPA William Renfro, DEQ
00000142.	Feasibility Study/Draft Reports/ Supplement	EPA summary and comments on Draft Feasibility Study	2/88	36	EPA	
00000147.	Feasibility Study/Final Report/EPA Comments	EPA comments on Final Feasibility Study	3/16/88	2	Dave Tetta, EPA	Jim Tracewski, NL Industries
00000070.	Treatability study	Letter and report re preliminary treatability study on lead contaminated soil	7/27/87	44	Todd K. Waller and James H. Dougherty, Weston Services, Inc.	Jim Tracewski, NL Industries, Inc.
00000071.	Treatability study	Lab report on 19 samples of various materials (Lab. No. 4793)	8/14/87	9	Barbara Gleason, Laucks Testing Labs, Inc.	Mark Schultheis, Dames & Moore
00000072.	Treatability study	Letter re request for permission to send 33-cubic-yard sample to Polycycle Industries, Inc.	8/21/87	1	David Tetta, EPA	James E. Tracewski, NL Industries, Inc.
00000073.	Treatability study	Draft work plan re collection and transportation of battery casing material from Gould site to Polycycle Industries	9/4/87	2	—	—
00000074.	Treatability study	Draft materials re initial screening of preliminary alternatives, final remedial alternatives and general response action categories and associated remedial technologies; attached chart	—	6	—	—
00000075.	Comments on RI/FS	Letter re Bonneville Power Administration's concerns about activities at Gould site and draft FS report	7/17/87	3	Judith L. Woodward, BPA	Dave Tetta, EPA
00000076.	Comments on RI/FS	Memo re comments on air monitoring portions of draft RI report prepared by Dames & Moore	7/23/87	3	John W. Schweiss, EPA	David Tetta, EPA

00000077.	Comments on RI/FS	Review comments on final RI	7/27/87	5	Kevin Dyer, Army Corps of Engineers	—
00000078.	Comments on RI/FS	Memo re review of quality assurance for RI at Gould site	7/27/87	1	Roy R. Jones, EPA	Dave Tetta, EPA
00000079.	Comments on RI/FS	Memo re review of NL/Gould RI	7/28/87	2	Rene Fuentes, EPA	Dave Tetta, EPA
00000145.	Comments on RI/FS	Memo re comments on endangerment assessment/Feasibility Study	1/15/87	4	Kenneth Kauffman Oregon DEQ	William Renfroe Oregon DEQ
00000146.	Comments on RI/FS	Letter re NOAA's comments on RI/FS as concerns freshwater environment	1/11/87	3	Lew Consigliieri, NOAA	Dave Tetta, EPA
00000080.	Document deleted as it is a duplicate of Document 58					
00000081.	Chain of custody	Chain of custody record re Job No. 11831-034	4/16/86	1	John Cooper, Dames & Moore	—
00000082.	Chain of custody	EPA Region 10 Laboratory—analyses required (metals); and field sample data and a Chain of Custody sheet. Lab #86160895.	4/16/86	3	John Cooper, Dames & Moore and Kevin E. Dyer	Pat Storm, EPA
00000083.	Chain of custody	EPA Region 10 Laboratory—analyses required (metals); field sample data and a chain of custody sheet. Lab #86384550-86384558.	9/18/86	4	Kevin Dyer, John Cooper, Pat Storm	Pat Storm, EPA
00000084.	Chain of custody	EPA Region 10 Laboratory—Analyses required: metals/oxygen demand, solids and nutrients/priority pollutants, organics; field sample data and chain of custody sheet. Lab #86510040-86510043.	2/27/86	6	Nancy Addison and Kevin Dyer, EPA	
00000085.	Chain of custody	EPA Region 10 Laboratory—Analysis required: metals; field sample data and chain of custody sheet. Lab #870300220-87030022.	1/12/87	4	Kevin Dyer, EPA	—



00000086.	Lab reports/raw data	Memo and lab reports re Willamette River monitoring results from near Rhone-Poulenc/Gould properties. Lab #850848.	2/11/86	35	J. A. Gillaspie, Oregon DEQ	Mike Gearheard, EPA
00000087.	Lab reports/raw data	EPA Region 10 lab report re sample #86160895	7/2/86	1	EPA Region 10 Lab	—
00000088.	Lab reports/raw data	EPA Region 10 lab report re sample #86160895	7/24/86	1	EPA Region 10 Lab	—
00000089.	Lab reports/raw data	Results of analysis of NL/Gould subsurface soils, groundwater and surface water	8/86-1/87	7	—	—
00000090.	Lab reports/raw data	EPA Region 10 lab report re sample #86384-550 through 86384-558 (test well)	11/4/86	9	EPA Region 10 Lab	—
00000091.	Lab reports/raw data	Revised subsurface soils table	1/20/87	2	Mark Anderson, Dames & Moore	Patricia C. Storm, EPA
00000092.	Lab reports/raw data	Letter and attached table re corrections to Round 1 chemical analysis result tables for NL/Gould project	1/30/87	2	Mark W. Anderson, Dames & Moore	Patricia C. Storm, EPA
00000093.	Lab reports/raw data	EPA Region 10 lab report re sample #86-51-0040 through 86510043 (test well)	2/3/87	4	EPA Region 10 Lab	—
00000094.	Lab reports/raw data	EPA Region 10 lab report re sample #87-03-0020-22 through 87-03-0020-22 (Lake/Reservoir)	2/24/87	3	EPA Region 10 Lab	—
00000095.	Lab reports/raw data	EPA Region 10 lab report re sample #87-03-0020-22 through 87-03-0020-22	3/12/87	3	EPA Region 10 Lab	—
00000096.	Lab reports/raw data	Drum inventory re Gould site	4/6/87	11	—	—
00000097.	Lab reports/raw data	EPA Region 10 lab report re sample #87-094550-50 through 87-094550-54	4/15/87	5	EPA Region 10 Lab	—

00000098.	Lab reports/raw data	Laucks Testing Laboratories lab report on water samples (lab #3932)	5/27/87	4	J. M. Owens, Laucks Testing Laboratories	Harlan Borow, Dames & Moore
00000099.	Lab reports/raw data	Remedial Investigation, NL/Gould site, Portland, Oregon, laboratory data supplement—Vol. 1	6/1/87	572	Dames & Moore on behalf of NL Industries, Inc., and Gould, Inc.	
00000100.	Lab reports/raw data	Remedial Investigation, NL/Gould site, Portland, Oregon, laboratory data supplement—Vol 2.	6/1/87	570	Dames & Moore on behalf of NL Industries, Inc., and Gould, Inc.	
00000127.	Lab reports/raw data	Sample/Project Analysis Results for sample numbers 87094550 through 87094554	2/26/87	5	EPA Lab, Region 10	
00000128.	Lab reports/raw data	Sample analysis results for sample number 86160895	4/16/86	1	EPA Lab, Region 10	
00000129.	Lab reports/raw data	Sample analysis results for sample numbers 86384550 through 86384558	9/18/86	9	EPA Lab, Region 10	
00000130.	Lab reports/raw data	Sample analysis results for sample numbers 86510040 through 86510043	12/17/86	4	EPA Lab, Region 10	
00000131.	Lab reports/raw data	Sample analysis results for sample numbers 87030020 through 87030022	1/12/87	3	EPA Lab, Region 10	
00000135.	Lab Reports/Raw Data	Remedial Investigation, Laboratory Data Supplement, Vol. 1, laboratory and QA/QC data	11/16/87	553	Dames & Moore	EPA
00000136.	Lab Reports/Raw Data	Remedial Investigation, Laboratory Data Supplement, Vol. 2, laboratory and QA/QC data	11/16/87	522	Dames & Moore	EPA
00000101.	Maps and photos	Photo analysis of Doane Lake hazardous waste burial site, Portland, Oregon	6/80	32	Office of Research and Development, EPA	—
00000102.	Maps and photos	Gould, Inc., site vicinity map	1/20/81	1	Dames & Moore	—

00000103.	Maps and photos	Willamette River fish runs and dredging conditions. Map located at EPA Regional file.	8/84	1	—	—
00000104.	Maps and photos	Handwritten notes and photographs re visit to Gould site on 1/13/86. Photos located at EPA Regional file.	1/13/86	7	Kevin Dyer	Pat Storm, EPA
00000105.	Maps and photos	Aerial photos of Gould site. Photos located at EPA Regional file.	2/7/86	6	—	—
00000106.	Maps and photos	Diagrams of sampling and monitoring locations at Gould site	6/25/86	3	Dames & Moore	—
00000107.	Maps and photos	Letter of transmittal and map re potential areas for drum disposal at Gould site	6/8/87	2	John D. Cooper, Dames & Moore	Pat Storm, EPA
00000108.	Maps and photos	Topographic survey of Gould/NL site, Portland, Oregon. Map located at EPA Regional file.	1/27/87	3	Dale E. Marx, Dames & Moore	—
00000109.	Maps and photos	Diagram of location of monitoring wells (?). Diagram located at EPA Regional file.	—	1	—	—
00000110.	Maps and photos	Study areas, Port of Portland	—	1	—	—
00000111.	Maps and photos	Map showing location of drum disposal areas at Gould site	—	1	Dames & Moore	—
00000112.	Maps and photos	Untitled map of Gould site. Map located at EPA Regional file	—	1	—	—
00000113.	Maps and photos	Preliminary hydrology investigation, boring-well locations. Map located at EPA Regional file.	—	1	—	—
00000114.	Maps and photos	Aerial photo of Gould site. Photo located at EPA Regional file.	—	1	—	—

00000115.	Other documents	Oregon ambient water quality toxics data summary--1979 to 1983	—	88	—	—
00000116.	Other documents	Memo re recommendation for sites in Region 10 where toxicants may be suspected in fish and shellfish; summary of sites and type of analyses; bioaccumulation site selection criteria form	5/6/86	5	David A. Terpening, EPA	Program Staff, EPA
00000143.	Other documents	Toxicological Profile for Lead, Draft	2/88	202	Technical Resources, Inc.	
00000117.	Technical guidances and references	Guidances for Administrative Record—Gould site	—	2	David Tetta, EPA	—
00000119.	Adjacent sites	Letter and ground water sample testing results for Rhone-Poulenc; letter re sampling procedures and analysis of water monitoring wells for Rhone-Poulenc	8/15/84	11	R. L. Ferguson, Rhone-Poulenc, Inc.	Charles Clinton, Oregon DEQ
00000120.	Adjacent sites	Memo re Gould site and attached copy of report: Tier 2 dioxin screening, Rhone-Poulenc chemical plant, Portland, Oregon, TDD R10-8405-09 (1/85)	3/15/85	15	Janet Gillaspie, Oregon DEQ	Agencies interested in Doane Lake District
00000121.	Adjacent sites	Memo with attached copy of a preliminary report, soil investigation for proposed Polysilicon plant, Wacker Siltronic Corporation, Portland, Oregon (6/85)	8/5/85	38	J. A. Gillaspie, Oregon DEQ	Staff interested in Doane Lake, Oregon DEQ
00000122.	Adjacent sites	Memo and attached report re results of groundwater analyses recently submitted to DEQ by Wacker Siltronic Corp.	10/23/85	10	Chip Humphrey, EPA	Patricia C. Storm, EPA
00000123.	Adjacent sites	Results of ground water analyses by Wacker Filtronic Corp.	10/23/85	7	—	—
00000124.	Adjacent sites	Monitoring well locations on proposed Polysilicon sites (Wacker Filtronic Corp.)	10/23/85	1	—	—

Applicable or relevant & appropriate  
requirement determinations for for  
feasibility study

3/7/88

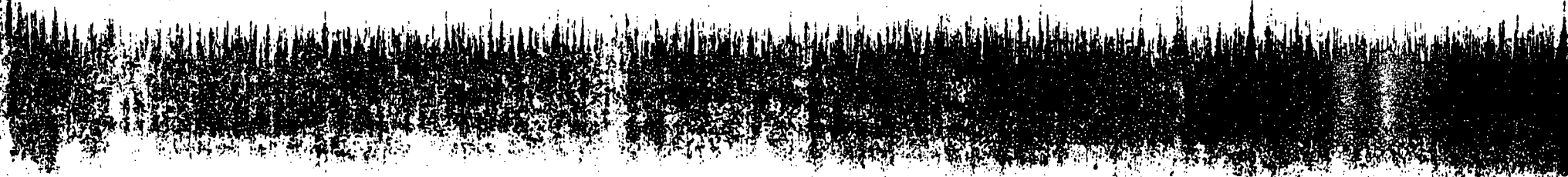
9

Fred Hansen, DEQ

Robie Russell, EPA

DOCUMENTS DELETED FROM ADMINISTRATIVE RECORD, GOULD SITE

<u>Doc. #</u>	<u>Title/Description</u>	<u>Reason removed</u>
00000080.	Letter re meeting on July 29, 1987, and RI/FS activities dated July 31, 1987, from D. Tetta, E	Duplicate of document #00000058
00000118.	Final Report, Field Investigation Oregon. FIT Project (sampling of ground water monitoring wells and piezometers owned by Rhone Poulenc Chemical Company to verify offsite migration of pollutants toward Doane Lake)	For internal use only



old index

uc. #	File	Type/Description	Date	# Pages	Author/Organization	Addressee/Organization
0000137.	Feasibility Study/Draft Reports, Binder #1	Feasibility Study, Volume 1, Text	11/19/87	310	Dames & Moore	EPA
0000138.	Feasibility Study/Draft Reports, Binder #2	Feasibility Study, Volume 2, Appendices	11/19/87	318	Dames & Moore	EPA
0000139.	Remedial Investigation/Draft Reports - Folder #2	Cover letter regarding attached Draft Response to Comments on Hydrogeologic Issues RI Report.	9/24/87	93	Dames & Moore	David Tetta, EPA Bill Renfroe, Oregon DEQ
0000140.	Feasibility Study/Final Report	Feasibility Study Final Report, Vol. 1, Text	2/88	545	Dames & Moore	N.L. Industries Gould, Inc. Dave Tetta, EPA Bill Renfroe, DEQ
0000141.	Feasibility Study/Final Report	Feasibility Study Final Report, Vol. 2, Appendices	2/88	447	Dames & Moore	N.L. Industries Gould, Inc. Dave Tetta, EPA William Renfroe, DEQ
- added documents						
00000142.	Feasibility Study/Draft Reports/ Supplement	EPA summary and comments on Draft Feasibility Study	2/88	36	EPA	
p. 6 [ follows 00000137 - 00000142, 00000147 ]						
00000143.	Other documents	Toxicological Profile for Lead, Draft	2/88	202	Technical Resources, Inc.	
p. 13, follows 00000116						
00000144.	ARAR - last document	Applicable or relevant & appropriate requirement determinations for for feasibility study	3/7/88	9	Fred Hansen, DEQ	Robie Russell, EPA
follows 00000124						
00000145.	Comments on RI/FS	Memo re comments on endangerment assessment/Feasibility Study	1/15/87	4	Kenneth Kauffman Oregon DEQ	William Renfroe Oregon DEQ
p. 9, follows 00000079						
00000146.	Comments on RI/FS	Letter re NOAA's comments on RI/FS as concerns freshwater environment	1/11/87	3	Lew Consiglieri, NOAA	Dave Tetta, EPA
00000147.	Correspondence	EPA comments on Final Feasibility Study	3/16/88	2	Dave Tetta, EPA	Jim Tracewski, NL Industries
p. 8 follows # 00000142						
00000148.	Public participation	Transcript of public hearing, Portland, OR	2/18/88	108	---	---
p. 3, follows 00000036						
00000149.	Public participation	Transcript of public hearing, Portland, OR	3/10/88	63	---	---

APPENDIX D  
STATE LETTER OF CONCURRENCE





MAR 29 1988

OFFICE OF  
REGIONAL ADMINISTRATOR

## Department of Environmental Quality

811 SW SIXTH AVENUE, PORTLAND, OREGON 97204-1334 PHONE (503) 229-5696

March 28, 1988

Robie Russell  
Regional Administrator  
Environmental Protection Agency  
1200 Sixth Avenue  
Seattle, WA 98101

Re: Gould Proposed Plan Certification

*Robie*  
Dear Mr. Russell:

The Oregon Department of Environmental Quality (DEQ) has carefully reviewed the EPA proposed plan for the soils unit as described in the draft final record of decision (ROD). The Department concurs with EPA's selected remedy based on alternative 10C as satisfying the statutory requirements for a remedy as required by the State of Oregon. It has been determined that the proposed remedial action complies with the applicable or relevant and appropriate requirements (ARARs) as identified to you in the Department's letter of March 7, 1988.

The alternative based on 10C maximizes the use of recycling technologies in providing a permanent solution to the contamination problem at the Gould site. This concept is in keeping with the intent of Oregon's "superfund" legislation.

Department staff are available to provide you additional information, if necessary. The appropriate DEQ contact is William Renfroe, (503) 229-6900.

Sincerely,

Fred Hansen  
Director

WTR:f  
ZF3002

cc: Mike Downs, HSW  
Kurt Burkholder, AG  
Dick Nichols, WQ  
Ron Householder, AQ  
Tom Bispham, AQ  
Chuck Findley, EPA  
Dave Tetta, EPA  
Mike Gearheard, EPA 000  
William Renfroe, HSW

## **Gould Site Soils Operable Unit**

### **REMEDIAL ACTION SCOPE OF WORK**

#### **I. INTRODUCTION/GENERAL REQUIREMENTS**

This document sets forth the Scope of Work ("SOW") that the Respondents shall undertake to implement the remedial alternative selected in the Agency's Record of Decision (ROD) dated March 31, 1988 for the Gould Superfund Site, Soils Operable Unit, in Portland, Oregon in accordance with the Unilateral Administrative Order to which this SOW is attached and is an incorporated and enforceable part thereof. Respondents shall prepare, submit for approval, and fully implement a Remedial Action Work Plan for incorporating each element of this SOW. The work plan will describe the plans and schedules for tasks that the Respondents will conduct in order to complete Remedial Action at the Gould Site.

The Respondents shall ensure that the work plans undertaken will meet the performance standards set forth in the ROD and Remedial Design for this site, and shall be consistent with National Contingency Plan ("NCP") and the Superfund Amendments and Reauthorization Act ("SARA"). All work pursuant to implementation of remedial action shall meet all applicable or relevant and appropriate standards ("ARARs") and follow as closely as possible and satisfy the requirements of Superfund Remedial Design and Remedial Action Guidance Document (OSWER Directive 9355.04A).

#### **II. DESCRIPTION OF THE REMEDIAL ACTION**

The major components of the Remedial Action for the Site that shall be implemented by the Respondents are outlined below. These measures and the cleanup standards for the remedy are outlined in the ROD and the Remedial Design.

- \* Excavation of battery casings fragments and matte from the Gould property and adjacent properties;
- \* Separation of battery casing fragments;
- \* Recycling of recyclable components, off-site disposal of non-recyclable components that exhibit the characteristic of EP toxicity for lead, and on-site disposal of non-recyclable components that do not exhibit the characteristic of EP toxicity for lead;

- \* Excavation, fixation, and stabilization of contaminated subsurface soil, sediment, and matte. This will include surface soils that have a total lead content above 1000 ppm and sub-surface soils, matte, and East Doane Lake sediments that fail EP Toxicity standards.
- \* Soil capping and revegetation;
- \* Prevention of surface water runoff to East Doane Lake by site regrading; and
- \* Conducting an air monitoring program and a long term groundwater monitoring program to determine changes in groundwater contamination over time and to ensure that remediation does not adversely impact air quality.

### III. ACCURACY AND COMPLETENESS

- A. Respondent will be responsible for correction of any design errors or deficiencies. Should design changes as a result of revised criteria be required, Respondents may be required to perform the necessary redesign work.
- B. In the event that discrepancies, omissions, or other errors in the drawings and specifications are discovered after the final submission, Respondents shall revise the specifications and/or contract drawings and provide the necessary data required to rectify the problem.
- C. It shall be the responsibility of the Respondents to check and coordinate all project data prior to all submittals. Deficiencies, ambiguities, conflicts and inconsistencies shall be corrected prior to submittal of documents. The letter of transmittal shall certify that all documents have been checked and coordinated prior to submittal and it shall be signed by the Project Manager or the Remedial Design firm.

### IV. EPA APPROVAL

EPA approval of the Remedial Action contractors, plans, specifications, processes, work plans and other submittals within the context of this Order is administrative in nature to allow Respondents to proceed to the next task. It does not imply any warranty of performance or that the remedy, when constructed, will meet performance standards or will function properly and be accepted.

#### **V. PROJECT MANAGER**

Respondent's Project Manager shall oversee the coordination of the Remedial Action and shall be capable of administering all instructions from EPA and obtaining answers to all questions from EPA during the Remedial Action. The Project Manager shall keep in close contact with the EPA Remedial Project Manager ("RPM")

#### **VI. REMEDIAL ACTION CONTRACTOR**

The qualifications to be submitted on Respondent's proposed Remedial Action Contractor pursuant to the Unilateral Administrative Order, must include sufficient detail to allow EPA to make a full and timely evaluation. Approval will be based on project-specific qualifications and professional competence. The factors to be considered in EPA approval include: professional and ethical reputation, professional registration, demonstrated experience and qualifications specifically required for the project, sufficient capacity (professional, technical, and support staff) to accomplish the project within the required schedule, and sufficient business background and financial resources to provide uninterrupted services throughout the life of the project.

#### **VII. CONSISTENCY WITH FEDERAL REQUIREMENTS**

All Remedial Action shall be completed in a manner consistent with the ROD, NCP, as amended, CERCLA, as amended; and in full compliance with the requirements of all federal, state and local air, water and waste disposal standards.

#### **VIII. REMEDIAL ACTION SCOPE**

##### **A. Remedial Action Work Plan**

The Remedial Action Work Plan will provide detailed plans and schedules for implementation of the Remedial Action in accordance with the Remedial Design, and the Unilateral Administrative Order and attachments thereto. It will contain, at a minimum, the following elements:

##### **1) General Requirements**

Describe the general requirements applicable to this remedial action. This will include provisions for performance of all work at and around the site in accordance with work plans and/or design plans and specifications that have been or will be prepared by the Respondents and submitted for review and approval

by EPA and the Oregon Department of Environmental Quality.

Each work plan will include (or reference), as applicable, the design, construction sequence and schedule, and the applicable operating, maintenance, and monitoring requirements. All deliverables shall be prepared in accordance with applicable EPA guidance.

Respondents shall demonstrate their ability to complete the work and pay all claims which may arise, ie. performance bonds, letters of credit, third party work guarantees, and provide for EPA access to financial records.

2) Project Management

Describe the project management and construction management, including information on the following:

Identification of key personnel, description of duties, and lines of authority in the management of construction activities;

Description of the roles and relationships of the PRPs, PRP Project Manager, Resident Engineer, Independent Quality Assurance Team, Remedial Design Professional, and Remedial Action Contractor;

Description of the process for coordinating construction activities with appropriate federal, state and local government agencies;

Identification of the Remedial Action Contractor or description of the process for selection of the Remedial Action Contractor and procurement activities;

Schedule for Remedial Action, and the process for updating the project schedule;

Requirements for Project Closeout.

3) Project Performance and Regulatory Requirements

Describe the process and responsibilities for meeting project performance standards and regulatory requirements, including the ROD, ARARs, health and safety, requirements for the off-site shipment of any waste material to an off-site waste management facility, and requirements for the off-site shipment of any material to an off-site facility for recycle.

4) **Inspection/Quality Assurance Activities**

Describe the plan, roles and responsibilities for inspection of remedial action work. Respondents shall retain an independent Quality Assurance Team, separate from the Remedial Action Contractor, to conduct quality assurance activities during the construction phase of the project. Observation of the work will involve implementation of the approved Construction Quality Assurance and Quality Control Plan. This includes inspections, observations, and review of the contractor's quality control program to determine if the technical provisions of the approved Remedial Design and Remedial Action Work Plan are being complied with and to assure that the quality of work is not compromised.

Describe the plan, roles and responsibilities for air monitoring and compliance and groundwater monitoring activities.

Describe the roles, and responsibilities and process for notifying EPA of circumstances or events which could delay the performance of the work.

5) **Validation of Remedial Activities**

Describe the plan for collection of data during remedial action to validate completion of project objectives. This will include documentation of the lateral and vertical extent of excavation, visual observations, verification sampling, and depth to clean fill.

The work plan will include a description of the frequency and type of reports required for the Respondents, ie., actions taken toward achieving compliance with the Order; sampling, test results, and all other data collected by Respondents or their contractors; plans and deliverables; actions scheduled for the next reporting period, status of project compared to project schedule in the work plan.

B. **Remedial Action**

Upon approval of the work plan by EPA, Respondents shall proceed with performance of Remedial Action in accordance with the approved work plan and schedule.

**C. Construction Completion and Closeout**

- 1) Respondents shall notify EPA of the completion of remedial action and request a pre-certification inspection. EPA will conduct an inspection of the entire site to determine whether the project is complete, and consistent with the contract documents and the EPA-approved Remedial Action Work Plan. A Pre-certification Inspection Report will be prepared which outlines any outstanding construction items noted, actions required to resolve such items, including completion schedules, and a date for final inspection if required.
- 2) Upon notification of completion of any outstanding construction items, EPA will conduct a final inspection. The final inspection will focus on outstanding items noted in the Pre-certification Inspection Report.
- 3) If no additional inspection is required and all outstanding items are satisfactorily resolved, EPA shall certify the remedy in accordance with Section IX of the Order.
- 4) Respondents shall prepare a Project Closeout Report following completion of the remedial action and EPA final inspection which certifies that all items contained in the Order and attachments and any incorporated documents (e.g., plans and specifications) have been completed, and that the remedy is operational and functional.

**D. Remedial Action Implementation Report**

Following EPA certification of project completion, Respondents shall submit a Remedial Action Implementation Report documenting that the project is consistent with design specifications, and all Remedial Action is performing adequately. The Report shall include, but not be limited to:

- 1) Summary of Remedial Action and certification of the design and construction;
- 2) Description of any modifications to the plans and why these were necessary for the project;
- 3) Listing of the performance standards and criteria for determining the remedy is operational and

functional, and any modifications to the standards and criteria;

- 4) Results of facility monitoring compared to performance standards and criteria;
- 5) Record drawings ("as built") of the project. At the completion of preparing a final closeout report for submittal to EPA.
- 6) Provisions for final storage of all records in accordance with the requirements of the Order.

#### E. Post Remedial Care

Respondents shall prepare and submit a post remedial activity plan at least 180 days prior to completion of Remedial Action. This will include a long-term groundwater monitoring program and inspection and maintenance program to evaluate effectiveness of stabilization and cap, and contingency plan for follow-up actions.

The post remedial activity plan shall include a description of the appropriate institutional controls and the process and schedule for implementing the controls.

#### F. SARA Five-year review

Since hazardous constituents will remain on site after completion of the remedial action, EPA will conduct a 5-year review of the remedial action at the Gould site as required by Section 121(c) of SARA. Respondent(s) shall participate in and/or conduct activities identified by EPA as part of the review. The review will assess the performance of the stabilized material, groundwater quality, the surface cap, institutional controls, air quality, and any other issues identified by EPA. The review will also identify additional action to be taken under the contingency plan or as a result of the review.



**Gould Site Soils Operable Unit**

**REMEDIAL ACTION SCHEDULE**

<u>ACTIVITY</u>	<u>DEADLINE</u>
Submit Remedial Action (RA) Work Plan	30 days
Select Remedial Action Contractor	60 days
Execute Contract(s) for Remedial Action	75 days
Initiate Remedial Action	60 days after EPA approval of RA Work Plan

**NOTE: All deadlines are based on the effective date of  
Unilateral Administrative Order unless otherwise noted.**